FLYING

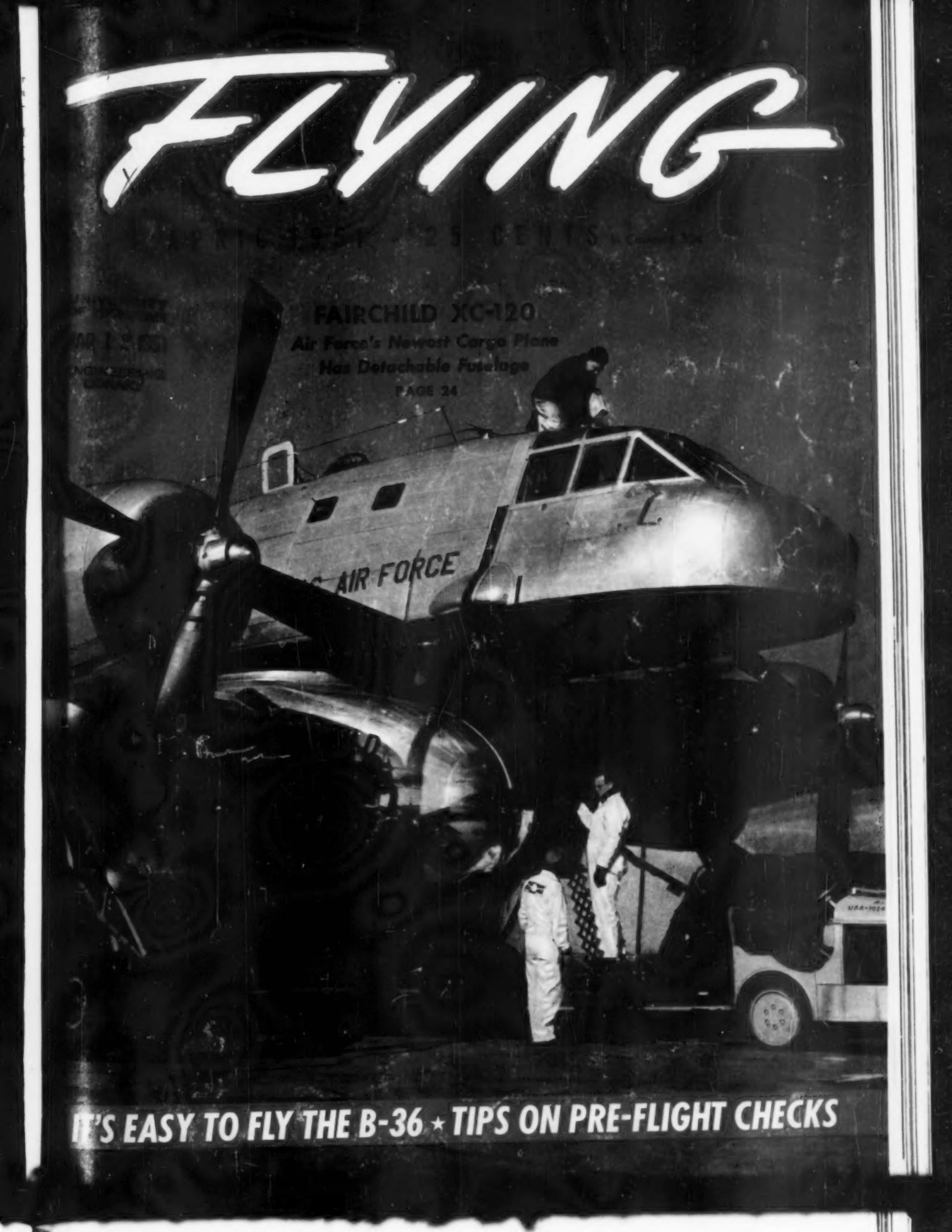

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photo by Greenhoff

Now in addition to the PACER with the regular gear for maximum performance, Piper offers for 1951 the TRI-PACER for maximum flying ease—priced almost two-thirds less than the next four-passenger plane with tricycle gear.

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COVER: Fairchild XC-120 (Pack Plane), shown here with cargo pod detached, may revolutionize air transport. (See page 24.)

EDITORIAL

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FLYING

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APRIL • 1951

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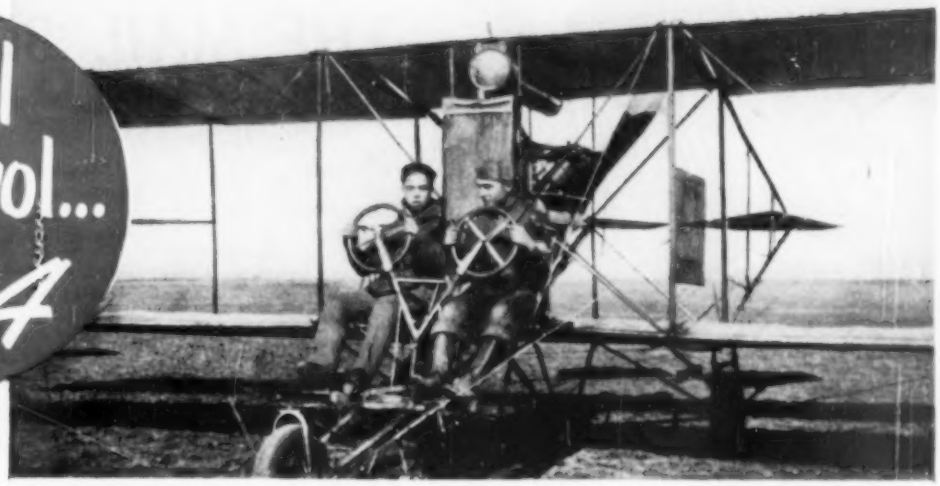
Dual Control... 1914



Over 35 years ago, Billy Parker taught students from the left hand seat of this dual control pusher. You paid $90 an hour to sit just forward of the lower leading edge and train the seat of your pants in maneuvers necessary to qualify for an Aero Club pilot's license.

Dual Control... 1951

Same idea . . . faster tempo! This dual control jet trainer is a Lockheed TF-80C "Shooting Star," used for teaching jet combat tactics, gunnery and high-speed navigation. The student sits in front, with an instructor for back-seat driver. Fully instrumented cockpits, front and rear, allow the plane to be flown at 600 mph by either pilot.

Petroleum research has kept pace with the pioneering of new aircraft designs to make possible the development of new, super-high-speed military planes. Phillips Petroleum Company has been a pioneer in developing . . . and supplying . . . high-octane gasolines, jet fuels, and lubricating oils for military and commercial customers.

Whenever you want reliable aviation products for today's . . . or tomorrow's . . . planes, think first of Phillips. The Aviation Department, Phillips Petroleum Company, Bartlesville, Oklahoma.

Phillips 66

AVIATION PRODUCTS

A prominent Aviation Magazine states that there were 239,059 people employed in Aviation as of June 1950 and there will be 1,000,000 by July of 1951. This means 760,941 more people added to aviation's payrolls. Trained men will get the best positions and will advance faster.

SPARTAN regularly receives requests for graduates from most major companies—more than can be filled. You can train at SPARTAN in the least possible time and be employed by one of the nation's aeronautical firms. But don't wait another day. The quicker you get your training the sooner you will be able to start on a well-paying career in aviation. Write today for complete information.

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THE MAIL BOX

THAT "F-80"

As we are students of the world's largest "Airplane and Engine Mechanic's School" here at Sheppard AFB, we are naturally interested in anything pertaining to airplanes, engines and flying. Every month, FLYING is passed from reader to reader until it is worn out.

Most of the fellows, after reading "The Truth About Air Support" in your February issue, were quick to recognize the aircraft you have tagged as an F-80 [page 11] is in reality a Republic F-84 *(Thunderjet)*.

BARRACKS 794
3757th Student Squadron
Sheppard AFB, Tex.

"The Truth About Air Support" . . . answered a lot of questions pro and con on jet aircraft ability. . . . But the aircraft pictured with the article is not an F-80—it's an F-84. . . .

PFC. WILLIAM UNKEFER, USAF
Camp Stoneman, Calif.

There's something rather queer about that "F-80." Who switched the air intake ducts to the nose?

OTHO E. PERKINS
Slidell, La.

. . . The boys at Republic over in Farmingdale, L. I., will be interested to find themselves credited with building the F-80.

HARRY M. LOUNSBURY
Riverside, Conn.

Republic F-84 (Thunderjet)

We in the Bolling *Beam* office feel better now that we see mistakes happen even in the best of publications. . . .

1ST. LIEUT. W. N. MONROE
Assistant Public Information Officer
Bolling AFB, Washington, D. C.

How could you . . . ?

JOHN R. DEAN
Naval Auxiliary Air Station
Chincoteague, Va.

If that's an F-80, I'll eat it. Moreover, you say "only two U.S. jets have been used in Korea—the Air Force's Lockheed F-80 and the Navy's Grumman F9F." This isn't true because the North American F-86 *(Sabre)*, and Republic F-84 *(Thunderjet)* have also been reported in action over Korea. . . .

BOB TILLOTSON
White Plains, N. Y.

● *We're sorry. We're wrong. It was a sudden attack of blindness that seems to strike all editors on occasion.*

At the time Author Black wrote the article in Tokyo, Air Force security regulations prevented him from revealing that F-84E's and F-86's were in the war theater. Air Force later released this information—but too late to allow insertion of the material in the article.—ED.

GRUMMAN F7F

The ground support article [see above] mentioned the Grumman F7F *(Tigercat)*. What's it look like?

BILL LANDON
Evanston, Ill.

Grumman F7F-3N (Tigercat)

TIP ON A TIP

Here's a tip on a "Flying Tip" [February FLYING]. A Lieutenant Kernell of the USAFR gives a mnemonic check list for the T-6 trainer: CIGFTP. You might tell the lieutenant to add the following: R—radio; S—shoulder harness; S—seat; T—tail wheel. If he uses these additional checks, he may save his neck sometime. It's taught like that in the Air Force these days.

LIEUT. R. L. FREEMAN
Tucson, Ariz.

OLD TIMER

I've been reading FLYING since way back when—even in the old POPULAR AVIATION days.

Enjoy practically all of your articles—especially the ones with the exceptionally interesting pictures, such as your February issue: "So You Think That's New!" by Peter Bowers.

Would like to see something of this type as a monthly feature.

LAWRENCE ZYGMUNT, President
General Aircraft Supply Corporation
City Airport, Detroit, Mich.

THE GRAND DUCHY

I am a Luxembourg student and take a very great interest in aviation—especially military aviation. Unfortunately, the Grand Duchy, handicapped by its

(Continued on page 63)

"...a superb engineering achievement"

says Vance Breese

August 5, 1950
1535 N. Dohney Drive
Los Angeles 46, California

LEAR, Inc.
Grand Rapids, Michigan

Gentlemen:

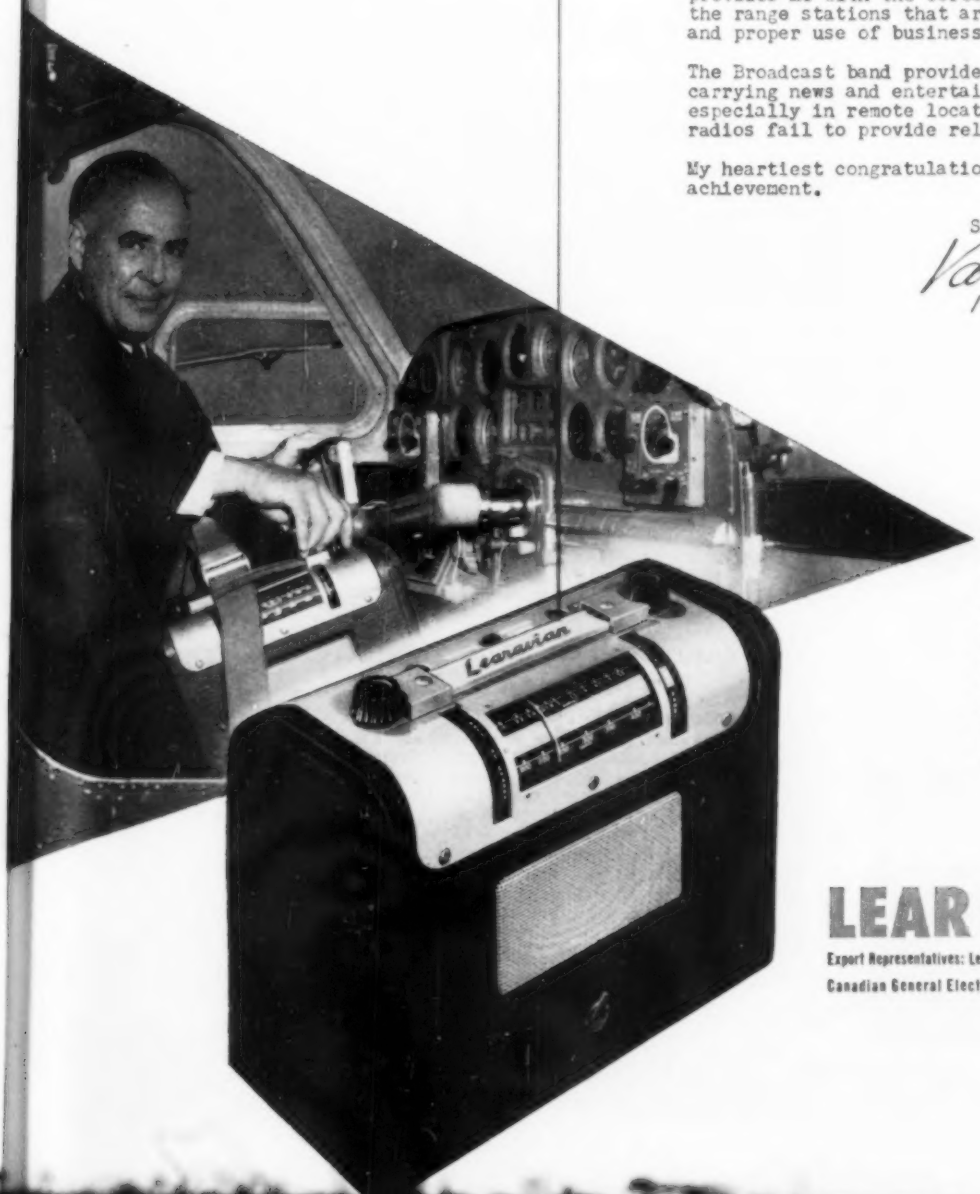
The LEARAVIAN has been a most satisfying investment. It has proven useful in many unexpected ways. In addition to supplying local and airways weather reports, I find that when planning transcontinental trips it is practical to listen to approach control and airliners en route (on the Marine band) from Honolulu to Chicago, thereby getting a fairly clear picture of conditions over a three thousand mile radius. This performance is all the more remarkable to me in that it operates on the built-in antenna, although my home is in a deep canyon in the Hollywood Hills, where reception is normally very difficult. The reception has proven completely dependable, either on external power or batteries.

The battery re-charging feature has eliminated the "dead battery" bugaboo that seemed always to occur when a set was most urgently needed. My business use of the BONANZA frequently takes me off Airways where the rural phone service is rather slow. The LEARAVIAN provides me with the certainty of latest reports from the range stations that are so essential to safe and proper use of business aircraft.

The Broadcast band provides a large range of stations carrying news and entertainment that is most welcome, especially in remote locations where many other radios fail to provide reliable reception.

My heartiest congratulations on a superb engineering achievement.

Sincerely,
Vance Breese
/s/ Vance Breese



MEET VANCE BREESE

famed aviation engineer and test pilot extraordinary. Mr. Breese served as consultant on design and flight test problems for Bell, Brewster, Curtiss, Douglas, Fairchild, Lockheed, North American, Northrop, Vultee, and other companies with whom he contributed to the development of many hundreds of airplanes. He conducted the first flights of the Mustang, Northrop Wing, Black Widow, Mitchell B-25 Bomber and many others.

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NOTES ON CIVIL FLYING

Lightplane Record

Caro Bayley set a new world altitude record for planes up to 2,220 pounds by flying a Piper *Super Cub* to 30,380 feet in a 20 minute flight at Opa Locka Airport during the recent Miami Air Races. Plane weighed 1,118 pounds at take-off, operated well at 34° below zero.

CAA Inspection Guide

CAA offers new practical lightplane inspection guide. It is 80-page illustrated manual for student mechanics, pilots, and personal plane owners. Price is 55 cents from Government Printing Office, Washington, D. C.

Solve Radio Noise Problem

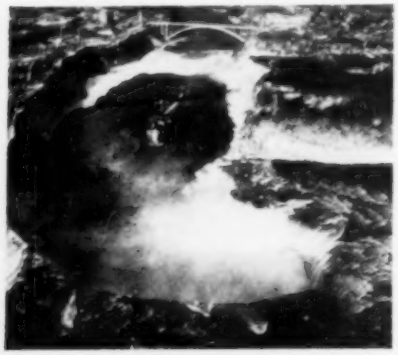
Spark plugs are the worst offenders for producing disturbing noises in lightplane radios, a study made for CAA by Electronics Research, Inc., reveals. Best noise suppression method is to have a properly maintained shielded ignition system. Use of resistance spark plugs without shielded harness provides an economical but not as good means of reducing ignition noises.

Lightplane Trend Up

Lightplane manufacturers see a demand for at least 25 per cent more planes in 1951 than in 1950—which in turn was above 1949. Only hitch attaining increased production is material shortages — though lightplane builders need but a tiny fraction of critical materials. Exactly 3,386 personal planes were built in 1950, valued at $19,157,000, compared with 3,362 planes valued at $14,324,000 in 1949.

Helicopters at Work

New uses for helicopters department: A Bell helicopter with a lead-weighted steel line has been used to chart the bed



of the Niagara River immediately above the falls. Engineers had tried for years to obtain this information by other means.

Notes from CAA

Airlines last year had a fatality rate of 1.2 per 100 million passenger miles flown, compared with 1.3 in 1949 . . . A total of 49,010 lightplanes were used in industries other than aviation. Agriculture led with 10,500 planes owned by farmers and ranchers. . . . There were 550,000 certificated pilots in 1950 compared with 525,000 in 1949.

Shoulder Harness on Bonanzas

New Beechcraft Model C35 *Bonanza* comes equipped with shoulder harness as standard equipment—the first U.S. personal plane to come so equipped. Designed by Beechcraft, the harness may be worn with shoulder straps in place or as a safety belt only. Other new features

of C35 include: increase in take-off h.p. from 196 at 2,450 r.p.m. to 205 at 2,600 r.p.m.; increase in normal horsepower rating from 165 h.p. at 2,050 r.p.m. to 185 h.p. at 2,300 r.p.m.; improved all-metal propeller; increased rate of climb; increased cruise to 175 m.p.h. at 8,000 feet; new wing root fillet improving stall characteristics; and installation of Safe-Flight stall-warning indicator.

Jail Buzzer

Canadian officials recently sent buzzing pilot to jail for seven days, fined him $200. When he couldn't pay fine he served 60-day imprisonment. "We have no room for circus flyers," one Air Services Official said.

Aero Commander $45,000

Aero *Commander*, now in production at Oklahoma City, will sell for $45,000. R. T. Amis, Jr., president of Aero Design and Engineering Co., builders, says factory has materials on hand to build 20 Model 520 *Commanders* and company is now accepting orders. First delivery will be made September 1, 1951, with subsequent deliveries in September and October. Plane is also being considered as a liaison-courier-utility plane and general's "staff car" by both Air Force and Army.

Legal Snag

Courts have held that airplane owners may be liable for accidents even if their planes are stolen—if they left them in such condition that it was easy for thieves to make off with them.

Cessna Leads

Cessna led all U.S. (and world) personal plane manufacturers in 1950 output. The company sold 1,134 planes valued at nearly $7,000,000.

Standardized Cockpits

CAB has approved amendments to CAR which assure standardized cockpits for new designs of transport aircraft. Specific arrangements are prescribed for basic flight instruments, positions of landing-gear, flap, and power controls and for the shape of control knobs. Compliance for the standardized instrument panel will be required on existing air carrier planes by December 15, 1951, and with the control knob shape and color requirements by June 15, 1952.

Safer Than Driving

Airline Quote of the Month: "Western Air Line stewardesses announce at the completion of each flight: 'Please drive carefully, or ask your driver to be careful, when you leave the airport.' Thus dramatizing the fact that travelers are seven times safer in airliners than on the highways."

No Jato for Lightplanes

Ryan L-17B (*Navion*) liaison plane was recently tested with an Aerojet *Jato Junior* rocket motor at Fort Bragg, N. C. Twenty-nine test flights were made and approximately 40 *Jato* bottles were used. Meanwhile, E. E. Nelson, director of Sales

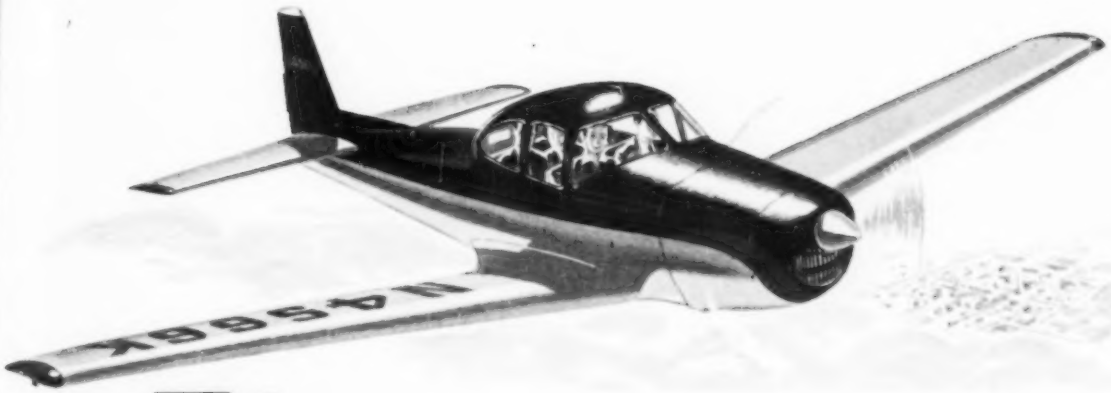
and Field Service at Aerojet Engineering Corporation, says that *Jato* brackets have been developed for both *Navions* and *Bonanzas* but the rocket has never been offered for sale commercially because it is still classified for security by the Navy. "We do not anticipate immediate relaxation of this classification," Nelson says.

Fancy Airport

Planned Honolulu Airport includes golf course, yacht club, midget race track. Main runway could be 15,000 feet long.

Tightening Up

Defense officials are already clamping security on news from aircraft factories. Type of production can only be announced in general terms—and then only providing item itself is not classified



Navion NEWSHEET

'51 SUPER NAVIONS SOLD OUT!

In 27 years of building and selling aircraft, we've never known a greater demand for Ryan planes. The entire production of the better-than-ever '51 Super Navions is sold out in advance. Hundreds more would be needed to satisfy the market demand.

PRODUCTION SCHEDULES

Due to an increase in high-priority military work, 1951 Navion production is being limited to about one-third of the number originally scheduled. As soon as the critical international situation will permit, Ryan will resume full-scale production of Navions for the civilian market.

SERVICE, PARTS AND USED PLANES

While civilian Navion production is curtailed, Ryan Customer Service and Spare Parts activities will be in full operation. In addition to service and parts, Ryan Navion distributors will continue to offer the best in reconditioned, modernized Navions for purchase or charter.

RYAN'S ROLE IN NATIONAL DEFENSE

Ryan makes many vital military items including Ryan-developed jet-propelled pilotless planes, huge fuselage sections, special-type fuel tanks, control surfaces and other major airframe components, as well as stainless steel parts and assemblies for jet, rocket and piston type engines. Ryan is also doing design and development work on many important advance-type engineering projects.

Ryan Navion

RYAN AERONAUTICAL COMPANY

104 LINDBERGH FIELD, SAN DIEGO, CALIFORNIA

MILITARY NEWS

THE WAR IN KOREA

. . . **How good** is the Soviet Mig-15? W. Stuart Symington, chairman of NSRB, says the "Russian-built Chinese jets" are superior to all operational U.S. jets except the North American F-86. Reports from Korea indicate the Mig can outfly the Lockheed F-80, Republic F-84 and Grumman F9F. English sources say the Mig is better than the Gloster Meteor and DeHavilland Vampire, the two RAF first-line jets.

. . . **History's biggest** jet battle (over Korea in January) ended with three Mig-15's knocked down, one probably destroyed, and three damaged. The dogfight, over Sinuiju across the Yalu River from Manchuria, was between 25 Republic F-84's and 18 to 28 Soviet jets. No American planes were reported lost.

. . . **China**, building up a tactical air force with Soviet help, has goal of 1,000 planes and trained crews by end of year. Chinese air force now totals about 700-800 planes, including jets. British intelligence says Russians "have taken complete charge" of Chinese air power.

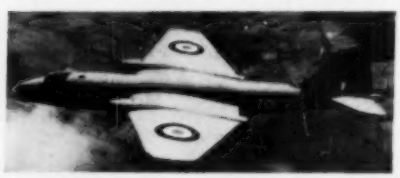
. . . **Republic Thunderjets** (F-84E's) now fighting in Korea were ferried to Far East on Navy aircraft carriers. The 17th Fighter Escort Wing started fighting in mid-December.

. . . **British carrier pilots** have flown close support missions for British ground troops in Korea, reports the London Daily Mail. Fireflies and Sea Furies from the carrier Theseus recently hit Chinese positions opposite the 29th Brigade. "British troops in their frozen foxholes cheered as the planes dropped bombs and fired rockets at treetop level, regardless of fierce light flak."

FROM OTHER FRONTS

. . . **RAF will be equipped** with North American F-86's to tide the British air force over for 18 months until still-secret jets can be put into operation, said English Defense Minister Emmanuel Shinwell in mid-January. RAF is now equipped with Gloster Meteors and DeHavilland Vampires.

Meanwhile, USAF is testing British-



built English Electric Canberra, twin-jet bomber designed as a night intruder. (See photo.) It carries two-man crew.

. . . **Soviet Air Force** "probably has 10,000 jet fighters," say usually reliable French sources.

. . . **USAF** now has six British bases, with three B-29 and B-50 groups and one F-84 group stationed in England.

. . . **Canada** will send an air fighter wing to Europe this year.

. . . **Red fighter squadrons** equipped with Mig-15's (Soviet jet fighter used in Korea) are stationed at Wernenchen, Grossenheim, Zerbst and Oranienburg airfields outside of Berlin.

. . . **Rumors** that B-36's might soon be based in Europe were revived recently when six of the USAF global bombers landed on a routine training mission at Lakenheath, England, after a 7,000-mile flight from Carswell, N. M. It was the first time the B-36 had flown a mission to Europe.

HERE AT HOME

. . . **Production notes:**
USAF will test a Republic F-84F with an Armstrong-Siddeley Sapphire 7,200-pound thrust engine.

Seibel Helicopter Company is building test order of S-4A helicopter for USAF. It will be designated YH-24. (See photo.)

First production order for turbo-prop engines in U.S. was placed with Allison by Navy. Order covers "a quantity" of Allison T-40 turbo-props, with static rating of 5,500 h.p. each.

Piasecki will double plant area and personnel during 1951 to produce "substantial number" of HUP-1 helicopters for Navy. Tandem-rotored HUP can fly 131 m.p.h., can carry five passengers plus crew of two.

. . . **Convair's** delta-winged XF-92 has new Allison J-35 engine with afterburner, giving it top thrust of about 8,000 pounds.

. . . **Army is organizing** transport companies equipped with helicopters. Each company will be equipped with 23 helicopters, two for command and reconnaissance and the rest for transportation of men, supplies and equipment.

. . . **Air Defense Commands** can federalize air national guard units without Presidential orders in a national emergency.

. . . **Navy** has ordered a modified version of the sweptwing North American F-86D, designated the FJ-2.

. . . **Headquarters** of U.S. air defense command has been moved from Mitchel Field, N. Y., to Colorado Springs, Colo.

. . . **By 1952**, Air Force will have between 95 and 100 combat groups and 971,000 personnel.

. . . **First DeHavilland Beaver** (C-127) has been delivered to USAF. The plane

is winterized for Arctic operation. With belly tank, it has 910-mile range.

. . . **All USAF reserve wings** have been alerted for active duty, as have all but about five Air National Guard Wings.

. . . **Most powerful turbojet** engine in world has been built for the Navy by Westinghouse. The J-40 develops the equivalent of more than 25,000 h.p. with afterburner.

. . . **The New Air Force:** Airmen in USAF now get clothing allowances and buy their uniforms. Installation stores now have booths, mirrors, tailors so each airman gets the best possible fit. Previously, uniforms were issued from warehouses—and the wearer didn't get to make a choice.

WHAT THEY SAY

. . . **Gen. Omar N. Bradley**, chairman of the Joint Chiefs of Staff, talking about possibility of U.S. being bombed: "If a determined enemy is willing to expend the effort, some bombers will get through."

. . . **Kim Yong Chan**, 22-year-old North Korean sergeant, captured by UN troops in Korea: "Airplanes worry us the most. As soon as we hear them coming we run and hide. I've seen your jellied gasoline bombs landing among troops. It is a horrible and fearsome sight. Some of our men are brave and don't hide from airplanes, but they get killed, sure enough."

. . . **Maj. Gen. Emmett (Rosie) O'Donnell**, former commander of strategic bombing in Korea: "If we're going to fight, we should use every weapon at our disposal. We're trying to fight under Marquis of Queensberry rules against a thug who's swinging an ax at the back of our heads."

. . . **W. Stuart Symington**, chairman of the National Security Resources Board, when asked if U.S. is building enough B-36's: "Based on the size of the ship and the job it has to do, the more we get the better. We're going to build a lot more than we originally planned."

FLYING
VOLUME 48, NO. 4
APRIL, 1951

It's easy to fly the B-36

Says B. A. ERICKSON

No other man has flown as many B-36's as B. A. Erickson, Convair's flight department manager. He was first to fly the prototype, first to pilot the production model, and first to fly the latest 10-engined version with jet pods.

IT'S TIME TO DEBUNK one of aviation's popular beliefs —that the bigger the airplane, the harder it is to fly.

After logging more than 1,000 hours on B-36 test flights, I can vouch for the fact that the B-36 is not only the biggest bomber in the world but also one of the easiest to fly. Despite its great size and mechanical complexity, the B-36 actually is as easy to handle as any of the World War II bomber types.

A few persons believe that there is something wonderful about the bigness of the B-36, forgetting that its size is merely a means to an end. The plane had to be big in order to carry heavy bomb loads over long ranges. Nevertheless, I have found that flying the airplane is a relatively easy and comfortable experience. The only really difficult B-36 flight

Two radiomen are needed to operate big bomber's equipment when plane is on a long-range mission.

Flight engineer, one of two regularly carried on B-36, is stationed in front compartment near pilots.

MILITARY NEWS

THE WAR IN KOREA

. . . **How good** is the Soviet Mig-15? W. Stuart Symington, chairman of NSRB, says the "Russian-built Chinese jets" are superior to all operational U.S. jets except the North American F-86. Reports from Korea indicate the Mig can outfly the Lockheed F-80, Republic F-84 and Grumman F9F. English sources say the Mig is better than the Gloster Meteor and DeHavilland Vampire, the two RAF first-line jets.

. . . **History's biggest** jet battle (over Korea in January) ended with three Mig-15's knocked down, one probably destroyed, and three damaged. The dogfight, over Sinuiju across the Yalu River from Manchuria, was between 25 Republic F-84's and 18 to 28 Soviet jets. No American planes were reported lost.

. . . **China**, building up a tactical air force with Soviet help, has goal of 1,000 planes and trained crews by end of year. Chinese air force now totals about 700-800 planes, including jets. British intelligence says Russians "have taken complete charge" of Chinese air power.

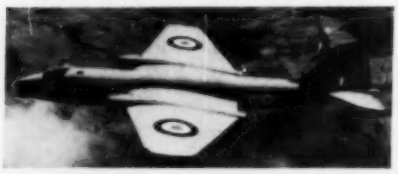
. . . **Republic Thunderjets** (F-84E's) now fighting in Korea were ferried to Far East on Navy aircraft carriers. The 17th Fighter Escort Wing started fighting in mid-December.

. . . **British carrier pilots** have flown close support missions for British ground troops in Korea, reports the London Daily Mail. Fireflies and Sea Furies from the carrier Theseus recently hit Chinese positions opposite the 29th Brigade. "British troops in their frozen foxholes cheered as the planes dropped bombs and fired rockets at treetop level, regardless of fierce light flak."

FROM OTHER FRONTS

. . . **RAF will be equipped** with North American F-86's to tide the British air force over for 18 months until still-secret jets can be put into operation, said English Defense Minister Emmanuel Shinwell in mid-January. RAF is now equipped with Gloster Meteors and DeHavilland Vampires.

Meanwhile, USAF is testing British-



built English Electric Canberra, twin-jet bomber designed as a night intruder. (See photo.) It carries two-man crew.

. . . **Army is organizing** transport companies equipped with helicopters. Each company will be equipped with 23 helicopters, two for command and reconnaissance and the rest for transportation of men, supplies and equipment.

. . . **Air Defense Commands** can federalize air national guard units without Presidential orders in a national emergency.

. . . **Navy** has ordered a modified version of the sweptwing North American F-86D, designated the FJ-2.

. . . **Headquarters** of U.S. air defense

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PA

MIS

FLYING
VOLUME 48, NO. 4
APRIL, 1951

AGES

SSING

-36

CKSON

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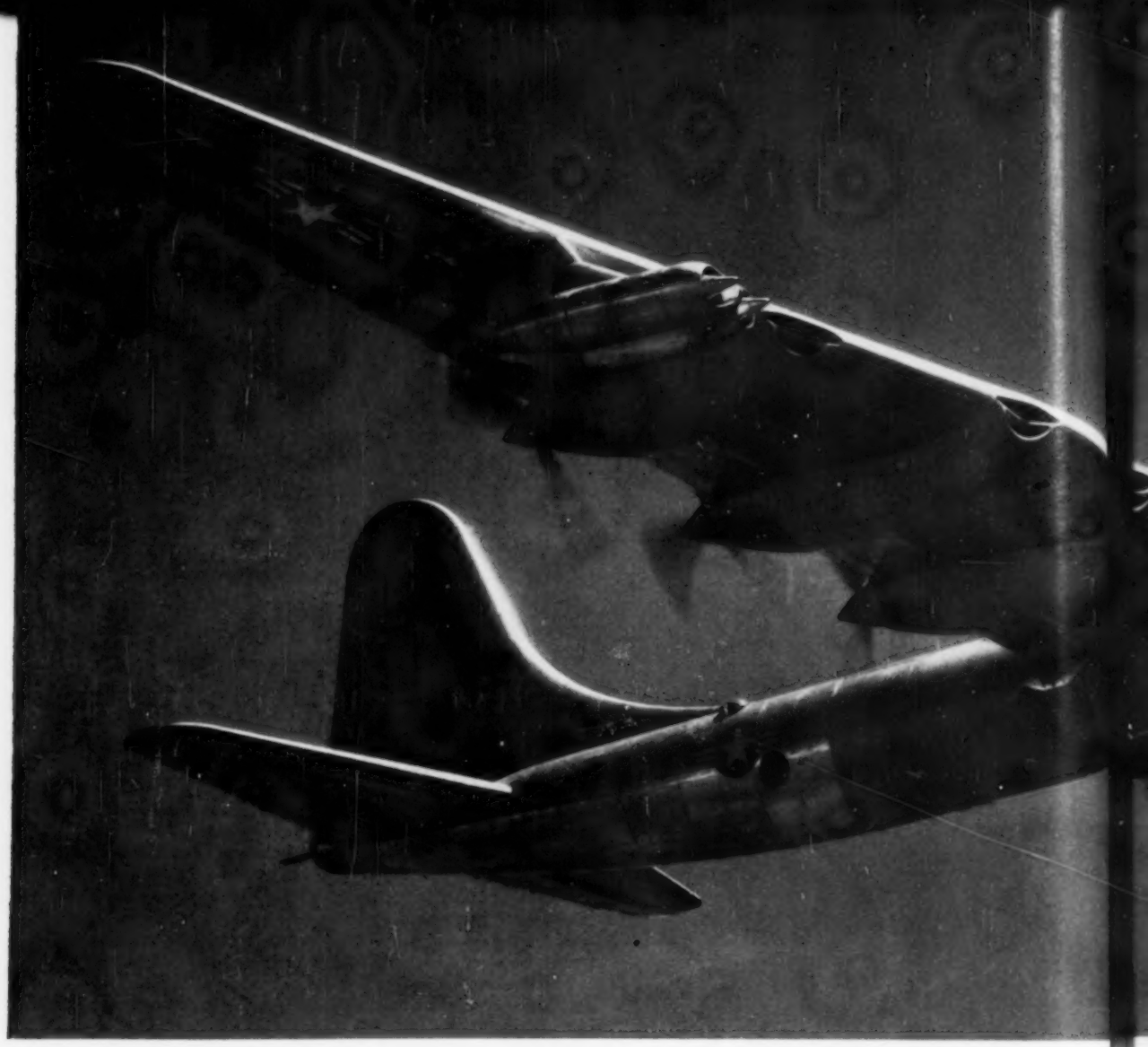
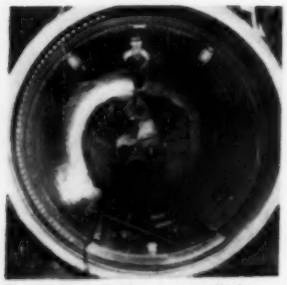




Crewman on tiny cart pulls himself through 85-foot tunnel between the front and rear cabins.

I have had was the initial one in the XB-36, the prototype, on August 8, 1946.

The strain of responsibility was heavy on me at that time, for I had already worked two years with the project and I knew it was the most costly ever attempted in aeronautics.

The four years since have proved that pilots learn to fly the B-36 with little difficulty. Qualified four-engine pilots check out in less flying time than was required in their original transition from single-engined to multi-engined aircraft.

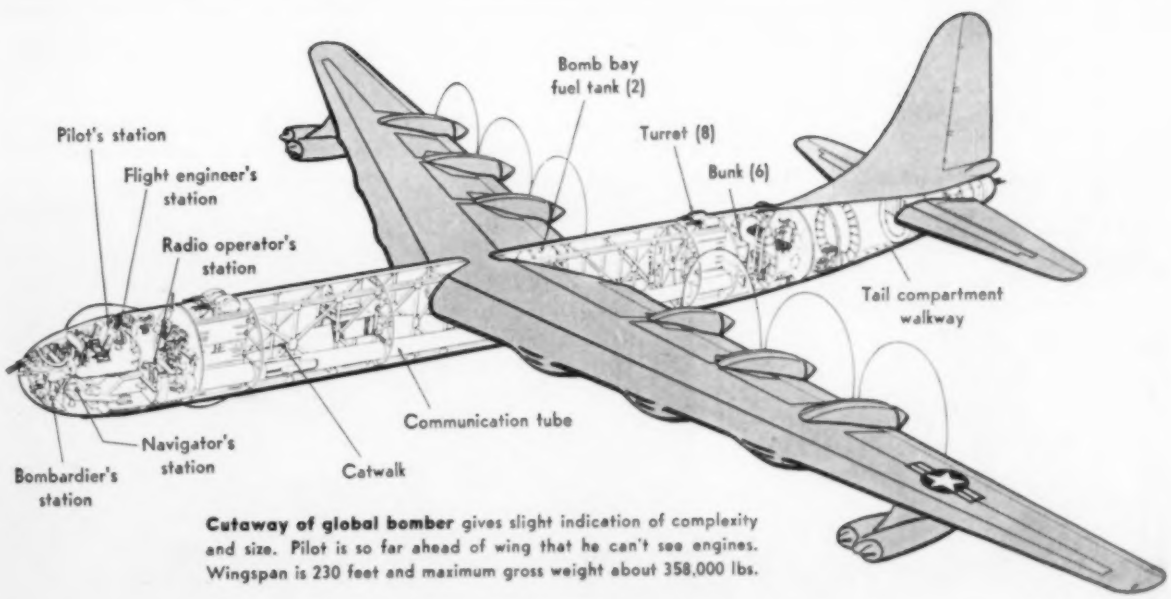
Furthermore, pilot adaptability—changing from the B-36 to a small plane or vice versa—is readily attainable. We require all B-36 test pilots at Convair's Fort Worth division to fly regularly in one of the company's little Stinson *Voyagers*. This is to keep each pilot alert to "dimension awareness"—vitally necessary in flying B-36's—and to maintain his flexibility of mind.

We have found that the best advice we can give a pilot learning to fly the B-36 is: "Be constantly aware of the airplane's dimensions and mass." In accomplishing a landing, for example, he must have unerring awareness of such things as the distance of the landing gear below and behind the pilot's cabin. Otherwise, during his approach he may allow the wheels to strike some obstacle while still at a distance from the landing field. As soon as a pilot develops this "dimension awareness" and has adequate mechanical understanding of the craft, he can go ahead and fly the B-36 like any other airplane.

Pilots like the flight security provided by the plane's 10 engines. Current models are equipped with six reciprocating engines and four jet engines. The loss of power from one engine—or even from two, three, or four engines—isn't critical. As one of our test pilots recently remarked, "Prior to the B-36, pilots usually considered themselves in pretty bad shape if they had four or five engines out."

Another reassuring thing (*Continued on page* 55)

World's biggest bomber has 10 engines (four jet, six reciprocating) that give it top speed of 435 m.p.h. at altitudes higher than 45,000 feet.



Cutaway of global bomber gives slight indication of complexity and size. Pilot is so far ahead of wing that he can't see engines. Wingspan is 230 feet and maximum gross weight about 358,000 lbs.

Relics of an ancient Indian civilization lay hidden somewhere in a lost valley...

Southwest of MOAB

WILLIAM D. MADSEN
A well-known Colorado light-plane pilot, Bill Madsen last appeared in FLYING in November, 1946, when he wrote "How to Fly in the Mountains." He is a CAP lieutenant colonel.

Landing in hidden valley, Don Vest drags the irregular landing area in Aeronca Sedan. The red rock formation in background, part of the valley boundary, houses many cliff dwellings never explored by white men. Site is at an elevation of 6,468 feet.

On large ruin at top of hill, party found painted pottery, arrowheads, spear heads and other Indian relics. They taxied planes to within 30 yards of old stone building

High on cliff, Don Vest (right) shot deer with pistol. Kent Wilson begins dressing it while George Vest watches in the background.

Lazy Valley Inn,
Evergreen, Colo.

Mr. Curtis Fuller, Editor
FLYING
185 North Wabash Avenue,
Chicago, Ill.

Dear Mr. Fuller:

There is an area southwest of Moab, Utah, comprising several hundred thousand square miles which is America's last great frontier. Some of this country is still unmapped. Arid, broken by thousands of canyons, showing massive folds of lava and rock, it is a part of the Colorado River drainage.

Last fall, a geological expedition hired some pack horses and went to explore. They marked an X on a map and left instructions with the airport operator at Moab to fly there in 10 days' time and drop provisions. In a flight of 40 minutes from Moab, he found the spot that it had taken the pack train seven and a half days to reach.

The ground party was standing in the center of a tremendous horseshoe-shaped amphitheatre with the open end to the east. Red, white and yellow sandstone formed the sides. Giant cliffs, towering spires and fantastic formations were on each side.

They found old Indian cliff dwellings, untouched for hundreds of years, probably never before seen by white men. Broken pieces of pottery, arrowheads, basket remnants were mute testimony of the absence of souvenir hunters. There were thin wild cattle in the area with horns spreading six and seven feet. They ran like deer at the sight of man.

Next month, several of us plan to fly back in for a visit. We will take bed rolls, supplies and plenty of film. Would you be interested in an article on the trip?

William D. Madsen

Chicago, Ill.

Mr. William D. Madsen,
Lazy Valley Inn,
Evergreen, Colo.

Dear Mr. Madsen:

The proposed article sounds interesting—and we'd like a first-person, colorful account of how you flew into this isolated area and what you found.

I am looking forward to seeing the manuscript, together with a selection of good photographs.

Curtis Fuller
Editor, FLYING

Lazy Valley Inn,
Evergreen, Colo.

Mr. Curtis Fuller, Editor
FLYING
185 North Wabash Avenue,
Chicago, Ill.

Dear Mr. Fuller:

This weekend we finally made the trip to the old Indian dwellings in the wild scenic country 60 miles southwest of Moab. It was worth the effort. Instead of a day and a half, we stayed three days.

We plan to go back some day with sleeping bags, a can of beans, a cannister of water—and spend a week. There is no doubt there are many cliff dwellings in this area as yet unseen by white men.

William D. Madsen

★ ★ ★

By WILLIAM D. MADSEN

I LOOKED EAGERLY at the wild, tortuous Colorado River valley beneath us. It was a fantastic land, rugged for the flyer, but indescribably beautiful. The silver river gleamed in a 3,000-foot blue canyon—looping back and forth for 30 miles while progressing only three miles toward the sea. Giant vermilion cliffs, isolated castle-like formations and slender purple spires reared from dark gorges.

Here we were, four men in two small airplanes, flying over torn and jumbled terrain where a forced landing would have meant disaster.

We were searching for a hidden valley that housed cliff dwellings and Indian culture deserted more than five centuries ago.

Our guide pilot was (*Continued on page* 62)

As safety precaution, flyers tie down Cessna shortly after arriving at valley. Don Vest digs wheel holes, Wilson secures line.

Excavating, party discovered pottery in almost perfect condition. Small doors in ruins indicated Indians were short people.

THE MENACE OF Russia's 'Flying Sportsmen'...

Communist sportsmen, including young girl fourth from left, check parachute gear before they make jump "just for the pleasure of it."

Alexei Nochevnyi, student at Moscow Industrial Col... makes his 152nd jump from a veteran Po-2 biplane tra...

Flying's free in Russia—if you're good military material. Yak-11 trainers taxi to runway at Moscow's Central Aero-Club, where college students and workers train daily.

Typical woman pilot is Marguerite Rob... a member of Central Aero-Club. She flies both gliders and fighting...

"In 1941, when NAA had been given Rockefeller help for a youth program, we printed a brief item stating that the first Air Youth training manual could be had for a dime.

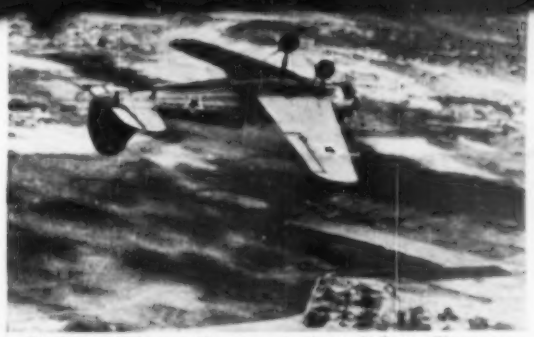
"Next day, an order came from the Russian embassy.

"Again, in 1942, the first inquiry about the directive which set up the CAP cadet program was from TASS, the Soviet news bureau.

"Today (in the U.S.) the radio, movies and TV are making the idol of youth not the pilot but the cowboy, with his obsolescent horse and six-gun, while Russia has a vast air youth program." —*from National Aeronautic Association*

You think the U.S. is aviation minded? Russia has the world's largest civil flying program.

Condensed from Interavia Review of World Aviation, Geneva, Switzerland



Student pilot practices aerobatics in Yak-11. This type plane is being replaced with more powerful Yak-18, Yak-21.

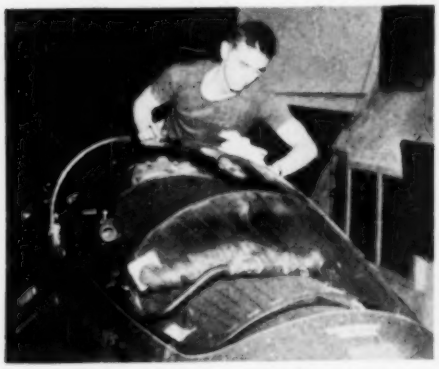
Central Aero-Club headquarters in Moscow is probably world's most pretentious. Club represents Soviet Union within the Federation Aeronautique Internationale.

SOVIET RUSSIA is paying more attention to sports flying than ever before. Russia's "aerial sportsmen"—thousands of lightplane pilots, civilian parachutists, aircraft model builders—form an immense reservoir of semi-qualified manpower for the Red war machine.

In Russia, aviation is not only the national sport but also is strictly a *nationalized* sport. That's the fundamental difference between private flying in the Western countries and sporting flying in the Soviet Union. In the West, anyone who isn't a congenital invalid or imbecile can take out a private flying license if he has the necessary small change. In Russia, you don't have to pay any money but you must have the qualifications for a soldier. In the West, a private pilot wearing glasses (*Continued on page* 63)

Best-known sporting pilot in Russia is Vasili Pavlov, who takes part in every Air Display at Moscow on Soviet Aviation Day.

1 **Day starts** at 4 a.m. when Twarek (nearest camera) and other crewmen shave hurriedly.



2 **On hangar deck,** Twarek cleans jet's canopy. When plane is moved, he'll ride controls.

3 **On flight deck,** Twarek crouches beside cockpit to help Pilot Leonard Pittman of Wichita, Kan. (barely visible through Plexiglas), adjust his safety harness.

EDITOR'S NOTE

Exploits of carrier pilots hit the headlines every day but who ever reads about the Navy's flight deck crews—the sailors who keep the big planes in action? While aboard the U.S.S. Leyte, an Essex-class carrier operating a few miles off the Korean coast, FLYING's managing editor Charles Black wrote this account of a day in the life of Clarence J. Twarek, 21-year-old plane captain in VF-31, a Grumman Panther (F9F) squadron.

Navy Photos by Carl M. Stroupe

Plane Captain Twarek

A DAY WITH A *Fighter Captain*

IT WAS a grey dawn off the coast of Korea, with clouds bulging over the sky and the sea boiling and churning. I walked across the flight deck of the U.S.S. *Leyte*—an immense deck covered with dark-blue *Panthers* and *Corsairs* and big *Skyraiders*.

Off our port beam, Korea was hidden beyond a misty horizon. In a few minutes, planes from Task Force 77 would take off for the front lines.

Right now, bent against the winds, bluejackets were swarming over the decks. Ordnance men were hauling bombs and rockets, affixing them under the fighters' wings. Planes were being gassed, little yellow jeeps were crawling up and down the deck.

Up forward the deck was clear—but to the rear there was a forest of folded-wing planes. I walked back toward one of the streamlined jets, climbing around the tiedown ropes that laced the planes securely to the ship.

When I got back to Number 112, a Grumman *Panther*, I didn't find the plane captain at first. Clarence Twarek isn't a big man. He's about 5' 6", and when he settles down in the cockpit, his head barely shows above the edge of the canopy.

A few minutes before, Twarek had hurried out on the flight deck, shivered in the cold air, and started over to his plane. He didn't have too much time. About the time the sun nosed up from the sea the jet *Panthers* would scream westward on a sweep through Communist Korea.

Hardly slowing his dog-trot, he hauled off the jet's air intake covers, the tailpipe covers, the plenum chamber door covers—then (*Continued on page* 47)

★ ★ By CHARLES L. BLACK ★ ★

Managing Editor of FLYING

4 **No. 112 waits** for signal to taxi to catapult launch. Twarek has just pulled the chocks and now moves out of the F9F's path. He went forward and stood beside the catapult to watch jet as it was hurled into the air, headed for a 90-minute Korean strike.

5 **Plane captains** (Twarek, third from left) rest in the line shack and talk about next mail call and their girls back home.

6 **After the mission,** Pittman stops for a moment to talk with Twarek before heading belowdecks for a de-briefing session.

7 **Time out for chow.** During lull in activities, Twarek (right foreground) and other crewmen eat big meal of fried chicken.

8 **Dead tired,** Twarek hits the sack at midnight. In four hours he'll be up again to get No. 112 ready for an early mission.

"An inspiration of nature . . ."

Things I'd Like To See

When Hy Sheridan started flying Wright Model B pushers back before World War I, he figured he'd see everything in aviation before he quit flying. But now, some 20,000 flight hours later, he's still waiting for some of aviation's biggest moments. These are a few of Hy's dreams.

By HY SHERIDAN

Captain, American Airlines

An airline pilot who thinks that private pilots have some rights in the air.

A CAA airline inspector who has had as much airline experience as the man he is judging.

A mechanic who cannot fly better than the pilot.

A stewardess who does not think that she is an inspiration of nature just because she is a female.

A design engineer who realizes that devices are tools and have to fit the man who is to use them—fit him mentally as well as physically.

An airliner control yoke which will permit a man to acquire the dignity of a pot belly and still be able to level out for a landing.

A tail wind.

An airline pilot who doesn't think that it is great sport to blow the field clear of small airplanes.

An accident that is not pilot error.

A young pilot who realizes that things are easy for him because of the work done long ago by the older pilots at the risk of their lives.

A landing gear that just fits between the airplane and the ground when landing.

An airliner that is built so it is not more than 95 per cent blind in clear weather.

A cockpit of an airliner where the pilot can see something beside his finish.

Airline bulletins that are more devoted to air than to bull.

An airline pilot who has left childhood far enough so that he doesn't go into convulsions when the stewardess bends toward him.

A radio that works when you need it.

An airline manager who does not think that familiarity with the English language consists in raping it.

A cockpit designer who is not a genius in thinking up devices and items to puncture the human skin.

Before I Die

A mechanic who doesn't have severe arthritis.

Regulations that are designed to protect the airplane instead of to protect the man who made the regulations.

A chief pilot who doesn't feel that flying a swivel chair has bloated his brains instead of his other end.

A chief pilot who knows he was made chief pilot in order to save the airplanes from him.

An instrument that is not fitted into a well so that half of it is in the dark when flying at night.

A flight engineer who does not think that Caruso was a bum.

A flight engineer who is not always trying prove it, especially when I'm trying to land.

An instrument pilot who realizes that the altimeter is wrong now and then.

A tower operator who knows that we land with caution all the time.

A weather man who does not predict everything, and thus predicts nothing.

Field layout designers who have heard that an airplane has to run up.

An airport that is not farther from the city than the next city.

A co-pilot who doesn't hand out free advice when we're coming in for a landing.

A pilot's seat that is designed to fit a human being and not a camel.

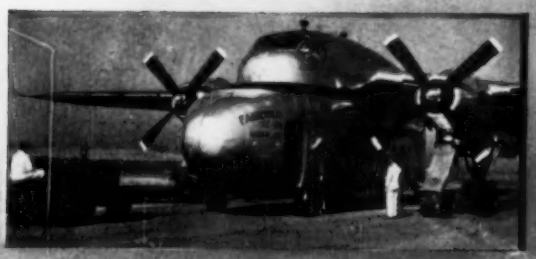
An airplane that doesn't want to go tail first when things are slippery.

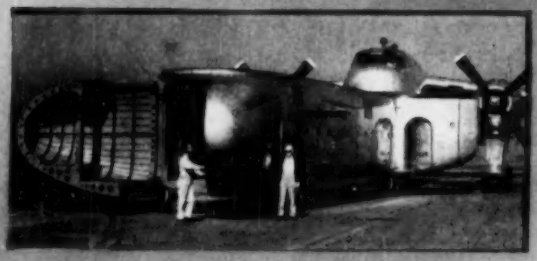
Wind that does not shift as soon as you tie down.

An airline passenger who was not in the *Lafayette Escadrille.*

A writer of a column like this who doesn't think that he knows it all.

Fairchild XC-120
PACK PLANE



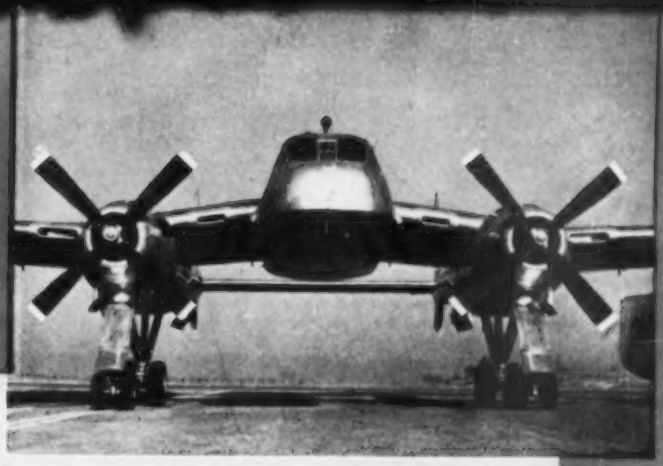


Versatility of Pack Plane is emphasized by photo sequence showing pod being towed away from mother plane (top), completely apart from plane (center), with doors swung wide (bottom). Expendable pods can be used as trailers, living quarters, radar stations.

XC-120 without its pod looks as though it has been slashed down the middle. Versatile craft is powered by two P.&W. 3,250-h.p. engines and can carry up to 20,000 pounds of cargo. It has basically the same operating characteristics as C-119.

Here's something brand new in air transports—a plane with a detachable cargo pod.

Photographs by Dan Frankforter



Pack Plane has exceptional military value. It can be unloaded in minutes and the entire pack hauled away like a wheeled trailer.

By JOHN F. LOOSBROCK

Washington Editor, Popular Science Monthly

UP TO NOW, the horse has had one big advantage over the airplane. Horses can be unhitched from their carts while the carts are being loaded.

For that matter, trucks and trains have the same lead. Trucks can be detached from their trailers. Railroad engines can be off on other jobs while freight cars are loaded and unloaded.

But the airplane—the fastest, most modern transportation of all—has had to stand useless on the ramp while its cargo is handled.

Now that picture has changed. The Fairchild XC-120 (*Pack Plane*), a revolutionary detachable-fuselage airplane, opens up a whole new era in air transportation.

The most obvious first application is military. In war, time counts for more than money and the essence of the *Pack Plane's* usefulness is time saved. Things begin to clog up a little when it takes 45 minutes to unload a Douglas C-74 and 15 to 20 minutes to unload a Fairchild C-119 or C-82—especially when someone is shooting at you.

In contrast, detaching a pod takes only a matter of minutes and then it can be towed off to a safe place for unloading while the mother plane is winging its way back to a supply base for another load.

The myriad extensions of the pod principle would seem to be limited only by the ingenuity of its users. One obvious application would be the prefabrication into pods of complex installations that are difficult to move piecemeal. (*Continued on page* 61)

Can Lend-Lease Solve Your Problems?

Forest S. Beckett says his lease-a-plane plan permits customers to sell themselves.

By GEORGE R. REISS

Ohio operator sells planes by leasing them. Here's how he runs a unique sales plan.

A FEW years ago, Forest S. Beckett, a flying service operator in Youngstown, O., was trying to sell an industrialist a four-place executive airplane for his business. The executive was impressed but he finally turned Beckett down.

"No," he said, "I can't afford to be bothered."

He explained that he was skeptical of the plane having enough utility to justify the cost of owning it. Besides, he said, the bother and expense of taking care of all the details—of hiring a competent pilot, of obtaining good maintenance, and of handling insurance—overshadowed time savings.

"Well," answered Beckett on the spur of the moment, "lease one of our planes for a year and give it a trial. We'll take care of all the details of a pilot, maintenance and insurance for you."

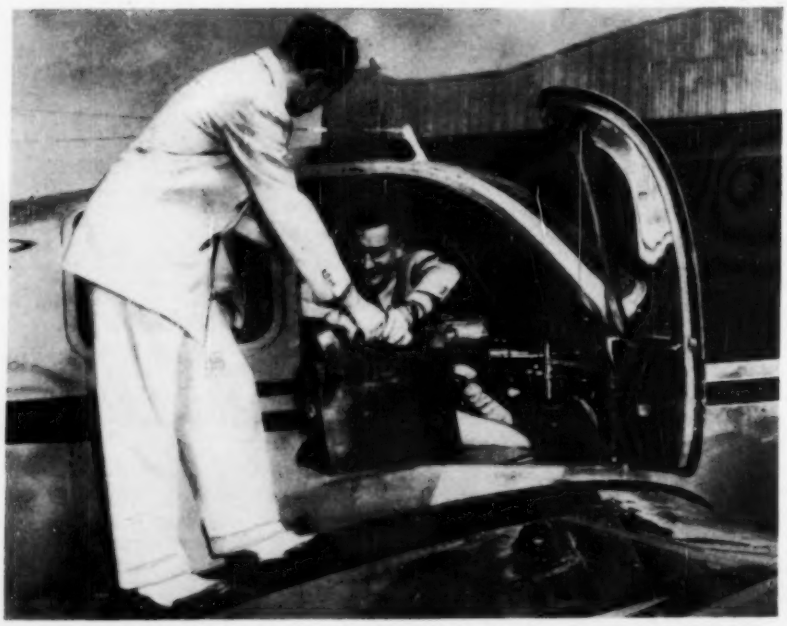
"Lease it?" mused the executive. "That's an idea! Let's try it."

From that small idea sprang the unusual "lease-operation-maintenance" plan being used by Beckett's Youngstown Airways, Inc.

Beckett and his company no longer work hard trying to sell executive airplanes to recalcitrant and skeptical industrial executives. Instead, they sell these customers the "lease-operation-maintenance" plan, and let the industrialists sell airplanes to themselves—and to other Youngstown Airways customers.

And some of these company executives, at first quite skeptical about the whole business of flying in personal aircraft, have become his most enthusiastic non-salaried salesmen. They've helped him sell at least 15 to 18 aircraft—new Beech *Bonanzas* or used planes he took in on *Bonanza* trades.

Currently Youngstown Airways is operating two $80,000 Beech twins and five *Bonanzas* under this novel lease arrangement for five nationally-known industrial concerns —a big electric company which is flying its fourth single-engined plane under this arrangement; a steel company, which has just signed up for its third *Bonanza* under the arrangement and also is buying a new twin Beech under the same plan; an engineering firm which has a *Bonanza* and a twin, another electric motor company and a steel fabricating firm. The company also furnishes pilots and maintenance for other concerns which own executive planes outright, and operates a charter service with its own Beechcrafts. At the Youngstown Municipal Airport it operates a flying school, shop, hangar and gas concession. It has the eastern Ohio-western Pennsylvania distributorship for Beech aircraft.



Businessman R. J. Wean, vice-president of an Ohio engineering company, climbs into a leased Bonanza, operated and maintained by Youngstown Airways. Beckett is the pilot.

Beckett employs seven pilots, all highly skilled instrument flyers, plus a half dozen mechanics and a force of office people, gas boys and hangar attendants.

"This is the ideal way to sell airplanes to industrial companies," Beckett says. "It takes away much of the hard work for both the plane salesman and the customer. It gives the customer a chance to find out for himself, and rather inexpensively, that a plane will work for him."

Here's how the novel plan works:

Beckett buys the airplane, fits it with equipment, such as radio, to the customer's (*Continued on page 42*)

Damaged planes can be cannibalized for useable parts when shortages come, says Government. This photo was taken after a recent windstorm at Indianapolis, Ind.

WHAT WILL HAPPEN WHEN SHORTAGES HIT?

Washington sets up a system for keeping essential planes flying during the current national emergency.

IT SEEMED that everybody had a question—or a problem.

As mobilization controls settled over the land and the nation prepared for wartime stringencies, harried Washington bureaucrats worked overtime to bring order out of chaos.

The aviation industry wanted to know what its job would be. Private flyers wanted to know whether they'd have a defense role. Businessmen wondered if they'd be able to use planes in industry. Airlines asked whether they'd be able to get essential planes and maintenance matériel.

Gradually, from Washington, the replies began to go out. Controls would be strict—but not inflexible.

Where will civil aviation get its planes, parts, accessories, materials and supplies? All civil aviation will be kept supplied during the emergency by Defense Orders, issued through the Office of Aviation Defense Requirements of the CAA. The Office, established by CAA Administrator D. W. Nyrop, is headed by G. R. Gaillard, who has been CAA's (*Continued on page* 46)

Well-stocked parts shelves may disappear after about a year. Government suggests establishment of used-parts firms.

Merry-Go-Round

Unique experiments show planes can operate from a tiny area, open up new training possibilities.

By J. G. WINANS

John Gibson Winans, associate professor of physics at the University of Wisconsin, became curious about circular take-offs after studying convertaplanes. He enlisted the aid of Sanders Aviation, Inc., world-wide Ercoupe distributors, for his experiments, and this article resulted.

LAST August 31 at Erco Field, Riverdale, Md., H. J. "Tommy" Thompson, test pilot for Sanders Aviation Company, stepped into an experimental three-control *Ercoupe* for one of the most unusual take-offs in history.

Attached to the left wing of the airplane was a 250-foot cable which was anchored at its other end to a post imbedded in concrete in the middle of the field. Tommy ran up the engine and checked the gauges. Then he started to roll. The *Ercoupe* gained speed and the cable grew taut.

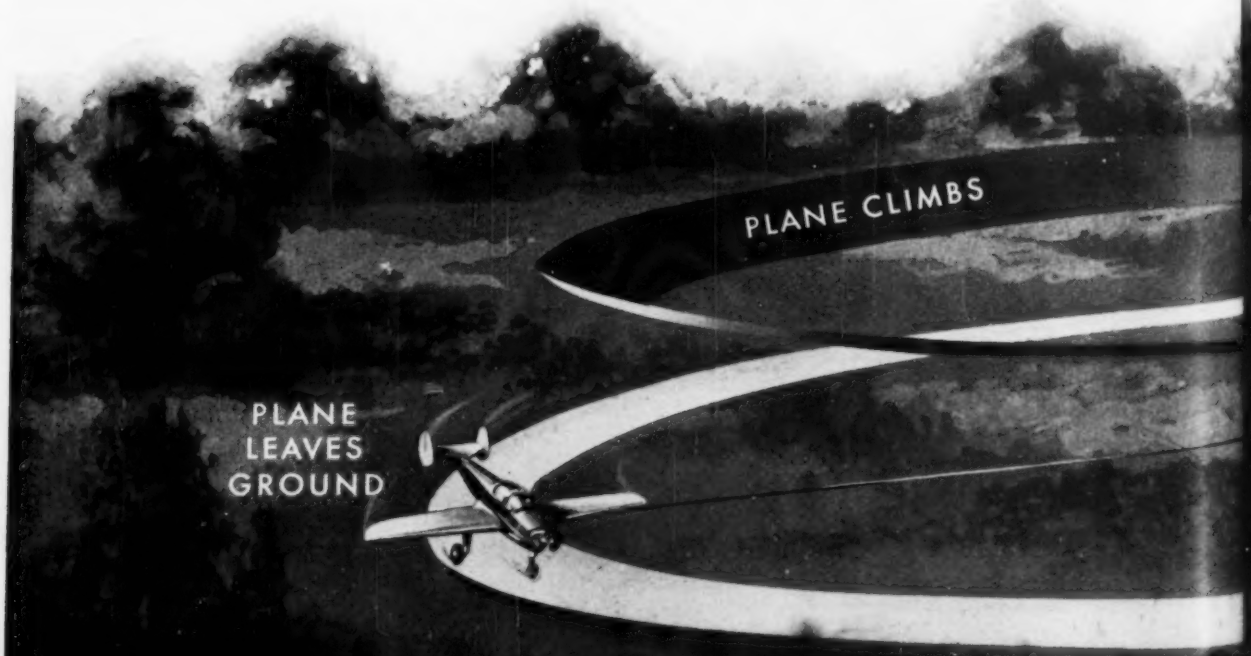
Round the post the plane roared. When it had completed about a half turn it was airborne. The *Ercoupe* climbed to about 100 feet and after another turn, Tommy pulled the release handle. The plane continued in free flight on a tangent to the circle it had been flying.

This flight was the culmination of plans which began in September, 1948, when the author first discussed the experiment with Robert Sanders, president of Sanders Aviation, Inc., *Ercoupe* distributors. The day of this first flight began with taxi tests by Robert's brother, Richard Sanders, and by Tommy Thompson. They tested the release mechanism while taxiing to be sure it would work when in the air and discovered that there was considerable discomfort associated with the centripetal acceleration when the airplane was approaching its flying speed of 40 to 50 m.p.h.

After landing from his first Merry-Go-Round take-off, Tommy reported that the discomfort in flight had been no greater than that which he had experienced in taxiing, and that it had disappeared by the time the plane reached an elevation of about 100 feet, corresponding to an angle of bank a little less than 30°.

Next the *Ercoupe* was landed while still attached to the cable. Tommy climbed the plane to a cable angle of approximately 45° and glided in to a landing without releasing the cable. He found no difficulty in landing but reported that when the plane was at a high angle of bank there was a tendency for the outside wing to stall out,

Circular take-off system provides endless runway to practice; can be used in marginal weather; would be invaluable to test new aircraft. Take-off here is at end of 250-foot cable which the author found too short; 400 feet would be better.



Take-Off

giving a sort of jerking motion. The lift loading on the wing at the high angle of bank was shown by the accelerometer in the plane to be 2.7 G units.

Robert Sanders then took the plane up, using a Merry-Go-Round take-off. He also climbed to an altitude representing about a 45° bank and also noticed the jerking motion. He released the plane at an altitude of a little over 100 feet and it again performed as expected, flying off on a tangent with no discontinuous effect on release. Next, Richard Sanders took the plane up and released at about 75 feet.

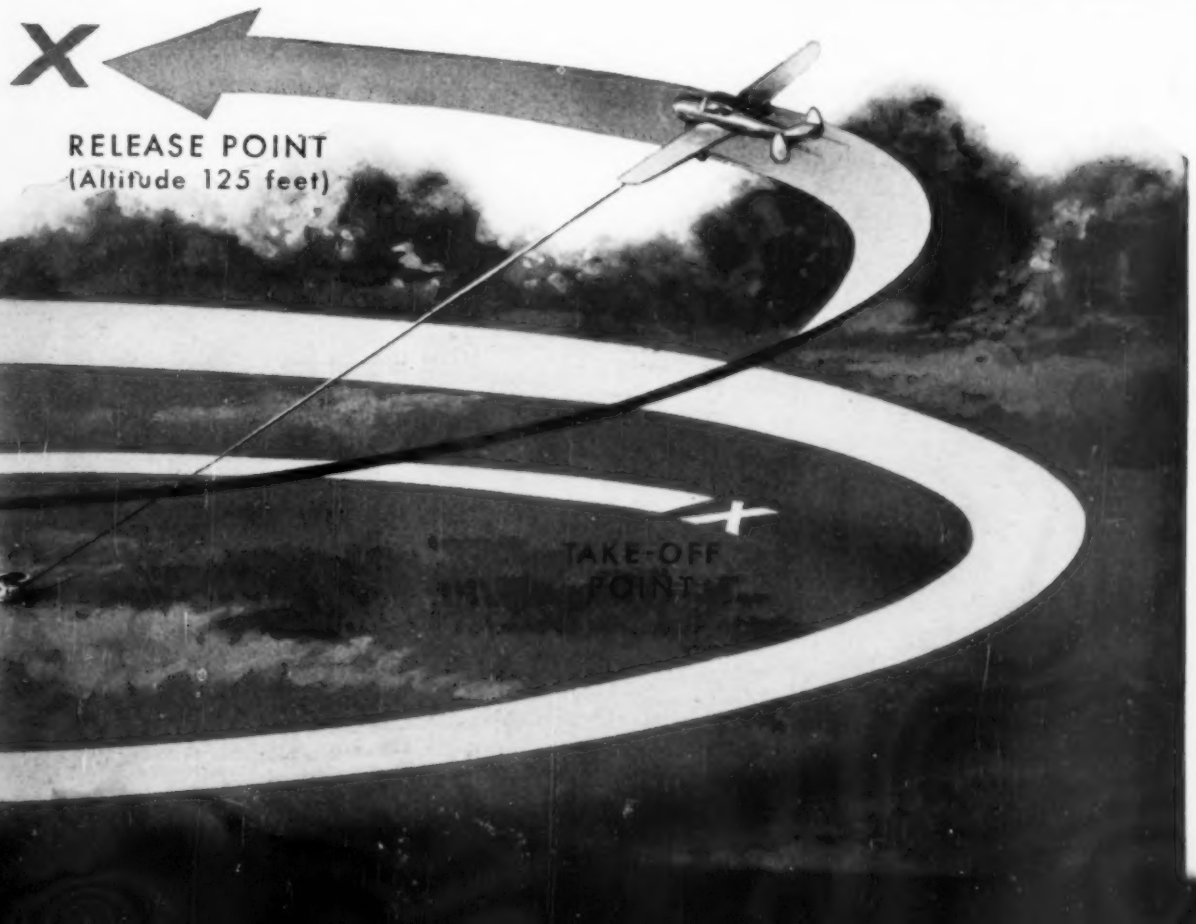
The author and Tommy took off together and climbed to about 100 feet. Tommy tried to release the plane from the cable but the additional loading of the two people put too much force on the mechanism and it would not release. We landed, requiring some power to maintain flying speed. We checked the release mechanism and decided that it could be released more easily by the passenger so we took off again and released at about 100 feet. With two persons in the plane at an angle of bank of about 30° the maximum speed was about 50 m.p.h.—not much above stalling speed. The craft gained speed rapidly after release from the cable, however.

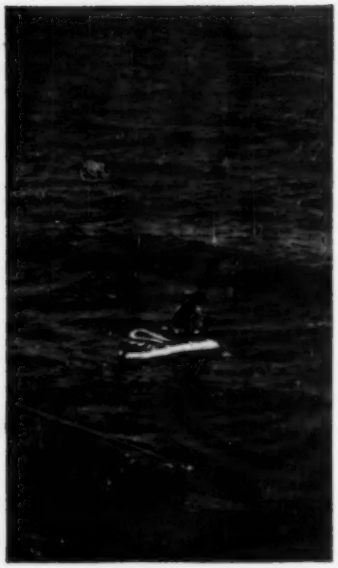
There are two marked sensations while flying an airplane at the end of a cable. The acceleration toward the center of nearly one G may or may not be pleasant—depending on whether you like to ride on certain carnival devices. We mostly found it uncomfortable—but not enough to interfere with the normal flying of the airplane. The second mental discomfort was that we found ourselves flying directly toward (*Continued on page* 59)

Robert Sanders

Jean Roché

H. J. "Tommy" Thompson, test pilot, Sanders Aviation, disconnects the wheel hub from buried post. Close-up of hub is shown at right. Note crack in concrete base.





999 Survived

Eaten by sharks, attacked by elephants, living on insects, these pilots would not die...

Adapted by Harland Wilson

THE BURMESE JUNGLE was dark and strange. To the hunted man skulking along the animal trail the Japs were a deadly menace. If you had scraped the mud from his face and clothing you would have found that his skin was white, that he was badly bitten by leeches, and that he was an officer in the United States Army Air Forces. He limped slightly, for he had been hurt in the parachute jump that saved his life.

Suddenly he sensed a movement in the jungle gloom ahead. He halted, trying to make it out. And then he saw a giant elephant, its tusks gleaming, charging toward him. Before he could more than turn to jump aside, the elephant's tusk hit him and flung him off the trail. The huge beast raced on without stop or turn. When he had recovered from his shock, the man knew it was a toss-up which had been frightened most. But he also knew that he was very fortunate to be alive.

The above incident is one of four involving elephants that are included in a recent study, "999 Survived," by Richard A. Howard, Ph.D., a botanist of Harvard University. In World War II, Howard was chief of the Jungle Survival School conducted by the Aero-Medical Department at Orlando, Fla. The study is an analysis of survival experiences in the Southwest Pacific and has been published by the Arctic, Desert, Tropic Information Center of the Air University.

Howard's study covers approximately 1,000 survival cases representing inflight emergencies for about 420 airplanes. It is the first comprehensive summary ever made of the results of the survival training given in World War II. Even during the war only a trickle of actual survival stories found their way back to the various schools.

Although the booklet declares, "The contents of this publication are the views of its author and are not to

Frantic with joy, crew of an Air Force bomber stranded 66 days on a South Pacific island hail their rescuers as the plane dips low over the hideaway.

"Man Friday," a Solomon Islands native, guided Navy pilot George Polk to base after an 80-day trek.

". . . And then he saw the giant elephant charging toward him. Before he had time to turn and jump aside, the elephant's tusk hit him and flung him off the jungle trail . . ."

be construed as carrying any official sanction of the Department of the Air Force or of the Air University," its findings are immensely valuable.

The author found four main reasons for inflight emergencies: (1) lack of fuel, (2) enemy action, (3) poor navigation, and (4) mechanical failure. The great majority of these emergencies led to bailouts. Parachute landings were usually successful but often led to injuries. Sixty per cent of the survivors were hurt by the time they reached the ground—either by combat action, in descent, or on hitting the ground. Ninety per cent were injured at some time before they were rescued—and 90 per cent of these used their first aid kits—a striking proof of their value.

Many men were lost for long periods—the longest studied here was eight months. The longest period of individual isolated survival lasted 23 days. Surprisingly enough, however, fewer than 15 per cent of the episodes lasted more than 48 hours.

Tales of heroism, of amazing ingenuity, and of suffering mingle in these stories. One man who bailed out in the Solomons broke his collar bone, set it himself, and strapped his arm to his side. Yet at times travel was so difficult he had to cut his arm loose to assist himself. He was in the bush three months before he was rescued. Another chap in New Guinea had a broken leg, set it himself, and was eight months awaiting rescue. Only one case of shock was reported and that man, recognizing the symptoms, rested with his feet higher than his head until the shock passed.

At the other end of the scale, a B-29 crew bailed out over a section of China believed occupied by Japanese troops. All the men landed safely and were quickly picked up by friendly Chinese. One man, however, had already drawn his revolver and shot himself before the natives found him an hour after his landing.

Even when some of the injured men were in great pain they seemed reluctant to use morphine from their kits. Morphine was used by 16 men but was self-administered by only two.

The men complained that there were never enough insect repellents in the first aid kits. They also complained about the lack of toothbrushes.

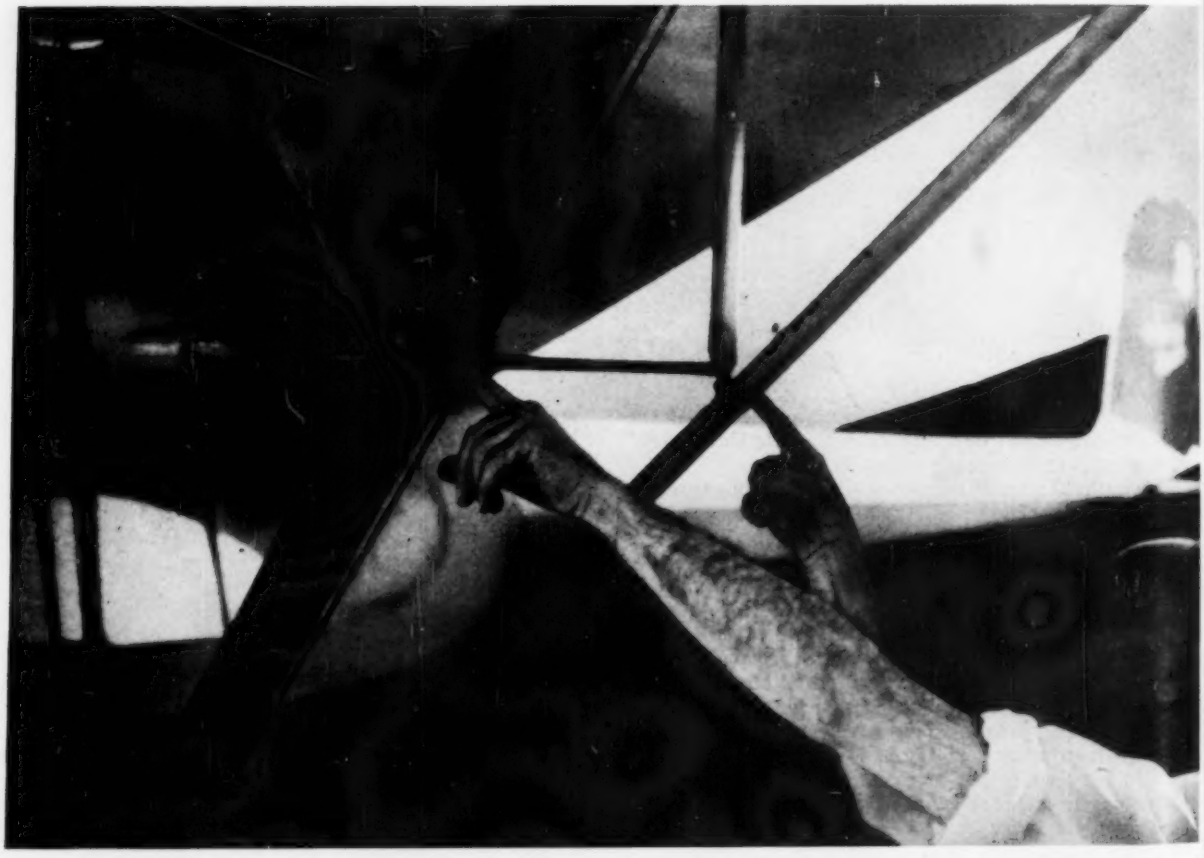
Lacking first aid kits, many (*Continued on page 52*)

Don't be lazy.
It will take you only
20 minutes to make
this pre-flight check.
And what's 20 minutes
to a lifetime?

1 **Check spark plugs** as you make clockwise tour around plane. Be sure there is no rust on plug connections.

2 **Drain gascolator.** This must be done daily, for water from condensation can form in tank overnight.

HOW TO Check Your Plane



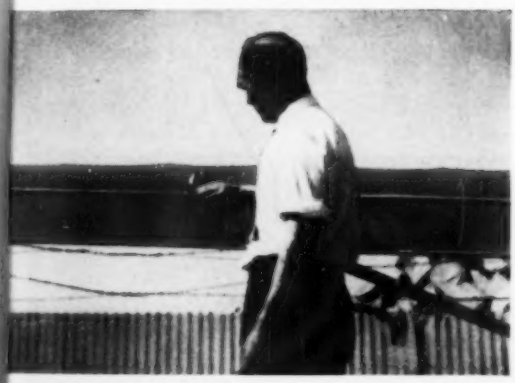
6 **Wing strut fittings** should be examined. Any defect in these will usually be indicated by a crack in the paint covering the fitting. The struts should be examined for dents or breaks. The cluster, the point where the main struts join the fuselage, should be looked over carefully, since this spot carries much of the stress. Tail struts and fittings must also be checked.

3 **Check oil level** by means of the dipstick fastened to cap of filler. Be sure to replace the cap tightly.

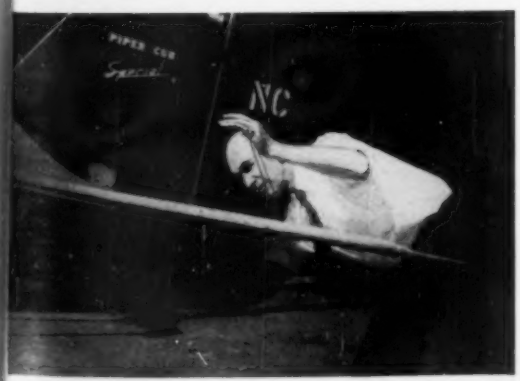
4 **Cabin heater** should be checked for cracks. A leak will fill the cabin with deadly carbon monoxide gas.

5 **Grasp each wingtip** and give it a shake. A rattle inside may indicate a broken structural member.

Before You Fly . . .



7 **Examine control fittings** on the ailerons and flaps as you continue circuit of plane. Later, in cockpit check, be sure to make a thorough test of controls.



8 **Tie rods** should be taut or the tail will flap. While you are at the tail section, check the tail wheel, wheel spring, and the bearings for excessive wear.

By BEN ROBIN

PHOTOGRAPHS BY GIL PAUST

AN OLD TIMER who should have known better took off without checking the gasoline sediment bowl for water. Fortunately his plane sputtered near the airport and he was able to make a safe landing . . .

A CAA inspector going up for acrobatic maneuvers didn't bother to remove inspection plates and examine the wing interiors. If he had, he would have discovered that rats had chewed the rib stitching loose. This caused structural failure, but, luckily, the wing held together until he landed. Now he practically sticks his whole head into the inspection holes looking for trouble.

Not all pilots are so lucky. Many fatal accidents due to structural failure could be prevented by a close and thorough inspection of the airplane before flight. While the modern lightplane is a sturdy and dependable machine, the wear and tear of use and storage can cause many ailments which may be dangerous. Cowlings with weak fasteners *have* been known to fly loose and cause serious damage. And cracked propeller tips can cause enough vibration to tear the engine from its mounts. Fabric may quickly deteriorate if the plane is tied-down outside; struts may be damaged by careless handling in hangars; oil lines may become clogged.

It may take a mechanic to repair such damage. But in most instances any pilot with normal intelligence, the proper inclination, and a few minutes of time can spot the trouble.

The one priceless advantage of a pre-flight check is obvious: it may save your life. But you stand to win financially as well, both directly and indirectly. Directly, you frequently can (*Continued on page 57*)

Industry's Private Airlift

By AL HARTING
Director of Public Relations
Southwest Airmotive Company, Dallas, Texas

We've got 60,000 warplanes on the nation's civil airports...

SINCE WORLD WAR II, American business has undergone a transportation revolution that has been practically unnoticed except by a few people in the aviation industry. We are intensely aware of it in our offices at Southwest Airmotive, air service operators of Dallas, Tex., because we are an integral part of it but sometimes we suspect that even within aviation it is regarded with more or less skepticism. However, it is more important that it be understood outside the industry, especially in this time of world crisis.

I would like to toss out a few facts that will show what I mean. . . .

- In 1935 there were only five multi-engined private airplanes in the United States. Today there are more than 2,000. In fact, that is more than twice as many as the scheduled airlines own!
- Less than four years ago there were fewer than 2,000 large single-engined airplanes owned by American business. Today there are more than 8,000.
- This year these airplanes will spend the equivalent of more than 171 years in the air. That's 10,000 times around the world—or about 240 million miles.
- In addition, there are 800 airplanes engaged in pipeline, power line and telephone line patrol; 2,000 in dusting crops, 1,400 in spraying crops, 3,000 in other industrial assignments from seeding to cattle herding.

In today's troubled international situation there is always the danger that the enormous importance of this industry will not be recognized. In an emergency the 60,000 operational planes owned by businesses, airport operators and private individuals in America would be an asset (*Continued on page* 49)

Thousands of U.S. lightplanes (like those below at Southwest Airmotive in Dallas) could furnish essential wartime transportation. Left, board chairman H. L. Nichols, Southwestern Public Service, discusses hop with pilot Fred Dick.

HAVE YOU SEEN?

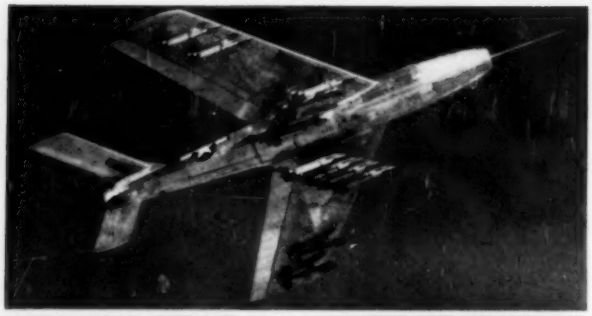
Texas Bullet in production at Tyler, Tex., cruises 180 m.p.h. at 6,000 feet. All-metal four-placer has 750-mile range, 48-gallon fuel capacity. Span is 28 feet, length 23.15 feet, and gross weight 2,300 pounds. Continental E-185-1 engine develops 205 h.p. at 2,600 ft.

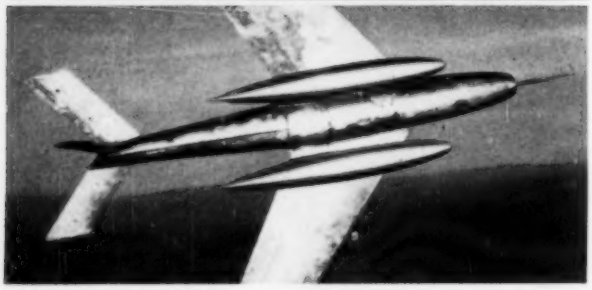
Yes, it's a PT-22. Biplane conversion of Ryan trainer was built by Paul Eddy of Findlay, O. Powered by 165-h.p. Kinner engine, plane has 115-m.p.h. top speed, 95-m.p.h. cruise and 45-m.p.h. stall. Its length is 21 feet. Top wingspan is 25 feet, bottom wingspan 21 feet.

HAVE YOU SEEN?

continued

Triangle-winged Douglas XF4D is new Navy interceptor designed to be catapulted from carriers for high-altitude missions. It has no tail, is essentially triangular planform wing with slim nose extending forward to provide cockpit for pilot. Navy has not released figures on specifications or performance.





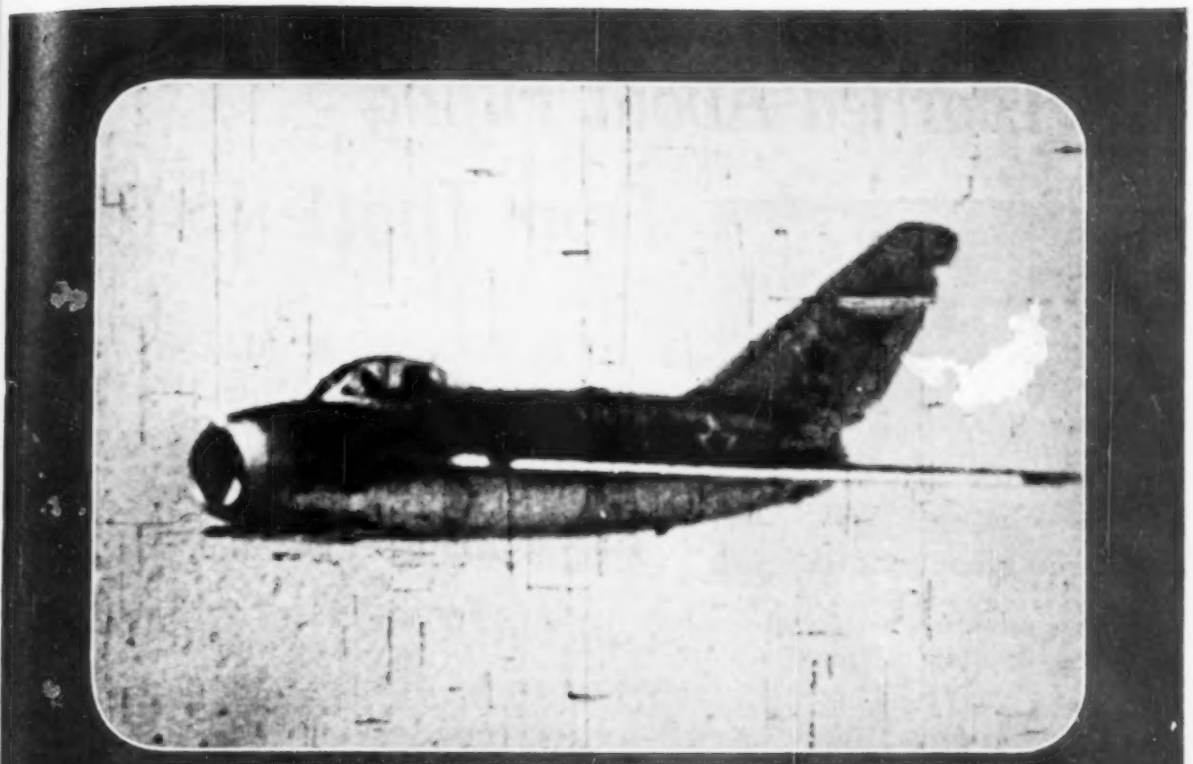
Sleek Thunderjet (F-84F) flies higher, faster, farther than other F-84 versions. Top, it carries 24 five-inch rockets. Bottom, external fuel tanks make it USAF's longest-range jet fighter.

FLYING BILLBOARD

GEORGE BARNARD of Portland, Ore., heads a successful air advertising firm built around an Aeronca *Champion* fitted with a gridwork of light sockets (bottom) under its wings. The sign (top) is operated off two 12-volt batteries wired in parallel. Barnard says the entire advertising installation, including the price of the *Champion*, cost about $8,000.

British-built four-place Chrislea Skyjeep can be adapted for air ambulance work, carrying stretcher, nursing attendant, equipment and pilot.

French Rey R-1 has flexible (rubber-jointed) wing that stabilizes fuselage in turbulence. It is wooden two-placer.



Russian newsreel photos captured in Korea show latest first-line Red Air Force jets. Mig-15 (top) has battled U.S. jets in Korea, is faster than all operational U.S. jets except F-86. New drawing (above) shows hitherto unpublished design features. Lavochkin-17 (right) is faster than Mig, has sharper wing sweepback, longer fuselage, more graceful fin and rudder. Both are now operational.

Ice-boat built in Coeur d'Alene, Ida., has 85-m.p.h. top speed. It was made from storm-wrecked Taylorcraft.

Convair Turboliner is first turboprop transport made in U.S. It is a research plane purchased by Allison to test its 2,750-h.p. 501 engines.

I Learned About Flying From That! NO. 137

The author, a 34-year-old Cleveland, O., pilot starting flying in 1948, holds commercial ticket.

By BERNARD K. ALLEN

His flight plan was perfect except for one minor thing: he forgot to bring it with him when he took off.

I WANTED to log as many hours as possible toward the 160 needed for a commercial ticket, and just flying around the airport can get boring. So I planned a cross-country flight to Bakersfield, Calif. I worked out every detail carefully—maps, check points, flight plan. I was to leave Cable-Claremont Airport at Claremont, Calif., fly through Cajon Pass, over the desert, then beyond the ridge to Bakersfield. The round-trip was to take less than five hours.

The day was clear, and all stations reported VFR conditions with not a cloud in the sky. It was a bit cool, but the Cessna 120 had a good heater so that was no problem. I made my pre-flight check and took off at 1 p.m.

Five minutes later I found that what had seemed a beautiful day on the ground was a terror in the air. Cajon Pass is quite an experience even flying at 6,000 feet in ordinary weather, but on a clear cold day it's like shooting the rapids on a raft. When I finally came out on the desert side of the pass I was considerably shaken. I was ready to turn back, but I didn't relish taking another beating in the invisible hands of the turbulent air. Besides, the thought of logging that five hours was mighty good. So I continued on into the desert.

The rest of the flight was easy. My check points came up and fell behind, and soon I landed at Bakersfield right on schedule.

Up to this point on my flight I believe I behaved as well as any novice flyer; but from there on that old stumbling-block, over-confidence, took over.

Fearing that darkness would overtake me before I arrived back in familiar territory, I took off in a hurry, clawed for altitude, and headed back. Then I looked for my flight plan to get the compass heading—and discovered my first mistake. I had left the flight plan at Bakersfield. If I had checked my compass heading before taking off, as I should have, I would have discovered the loss.

Right there a novice pilot in my position should have returned to the field and worked out a new plan. But that would have meant losing an extra half-hour or so. Instead, I hit on a foolish plan. My incoming compass heading had been 305°; by subtracting 180° from this, I figured I would be turned around and headed back toward Palmdale, a check point en route. It seemed brilliant.

My check points were marked on the map, and I searched for the first one. It didn't appear. But I'd missed one or two in previous flights without any disastrous results. I waited for the second, Double Mountain, which should appear about 20 minutes later. That, I thought, I just couldn't miss. But when I looked off my left wing, the mountain wasn't there. Nor was it anywhere in sight. There were plenty of mountains out there, but no double one. Something was wrong.

There were mountains around me—big ones, little ones, and some in between—and all were mean looking. There wasn't a single place to land in case of an emergency. That's what really bothered me.

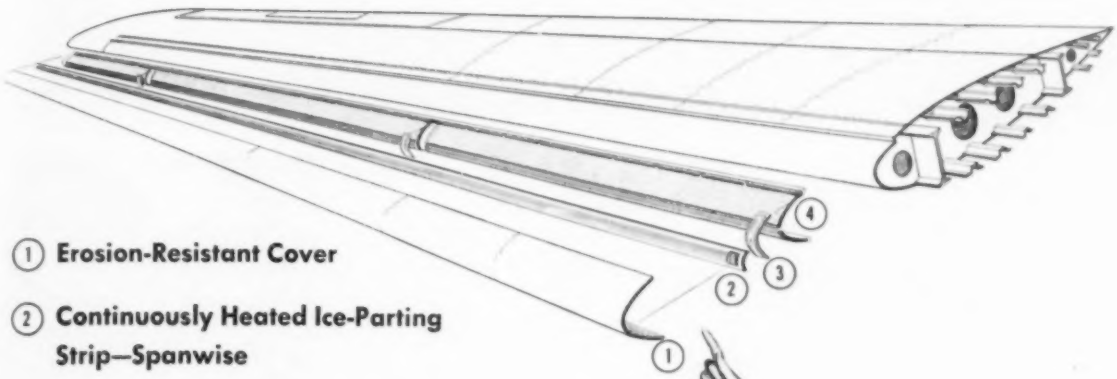
I started to think carefully. Just where had I pulled a boner? I had reasoned that by subtracting 180° from my incoming heading, I would be headed back toward Palmdale. But wait a minute. What about wind? Could it have changed direction? Not very likely, I thought. I had been in these same skies not long before and no drastic weather changes had occurred. And then it hit me! The wind had been on my left going into Bakersfield. Therefore, it would now be on my right. In order to get a reverse compass heading the correct procedure would have been first to *add* the incoming wind correction (since I had subtracted for left wind on the flight down), *then* subtract the 180°, and then add another correction for the wind now coming from my right. For the past 20 or 30 minutes I had been flying just 20° off my correct compass heading.

Now I was straight on that, but where was I? By carefully comparing the map and the formidable-looking terrain below, I was able to set a new course. Constant checking and careful inching along brought me finally within sight of Double Mountain. Then I tuned in Palmdale Radio and waited until I caught the range-course signal. With my map and the steady "hmm" of the beam, it was simple to reach Palmdale, where I landed and worked out a new flight plan.

I flew home through San Fernando Pass, a quicker and smoother route than Cajon Pass, and arrived just as it started to get dark.

On that five-hour flight, I learned how difficult it is to plot a course and fly at the same time. From that day on, locating my flight plan became a part of my line-check on all cross-countries. END

TYPICAL DIAGRAM OF GOODYEAR ELECTRO-THERMAL ICEGUARD


1 Erosion-Resistant Cover
2 Continuously Heated Ice-Parting Strip—Spanwise
3 Continuously Heated Parting Strip—Chordwise
4 Cyclic Heated Ice-Shedding Area

New "hot rubber" Iceguards

eliminate icing hazards

TEN years of research by Goodyear is bringing new safety to flying in icing conditions. The Electro-Thermal Iceguard—a shield of electrically heated rubber that fits the leading edge of the wing and other surfaces, has been successfully developed by Goodyear.

Lacking the complexities of other methods, and adaptable to various wing shapes—this new heated boot with its ice-eliminating ability is an important contribution to safer aviation.

Because of its simplicity, the new Goodyear "heated rubber" can also be used on props, antenna masts, ducts and other parts requiring ice protection, or can be installed elsewhere for heat radiation. For facts on the new Electro-Thermal Iceguard and other famous Goodyear Aviation Products, write:

Goodyear, Aviation Products Division
Akron 16, Ohio or Los Angeles 54, California

GOODYEAR
AVIATION
PRODUCTS

Iceguard—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

We think you'll like "THE GREATEST STORY EVER TOLD" Every Sunday—ABC Network

AIRCRAFT OWNERS AND PILOTS ASSOCIATION

AOPA NEWS

Aircraft Owners and Pilots Association is a service organization for the private pilot or aircraft owner. AOPA's full time staff is devoted to helping the individual pilot. Its aim is: "To make flying more useful, less expensive, safer and more fun."

Headquarters are: 15th and New York Aves., Washington 5, D. C. Members also receive a special AOPA edition of FLYING, newsletters and confidential aviation data. Opinions expressed in this column are not necessarily those of FLYING Magazine.

HELP NEEDED

The joint CAA-AOPA engine-trouble report project needs the continued support of all private flyers. The plan—outlined in the February AOPA PILOT—asks pilots to drop us a note if you would be willing to discuss your engine troubles with a regional CAA representative. The detailed information you provide will be relayed to Washington to be compiled into vital statistics on these engine problems.

If you've had any powerplant difficulties in the last three years, send your name, address and phone number to AOPA. We'd like to hear from all pilots, whether AOPA members or not.

FACTS AND FIGURES

End-of-the-year statistics of AOPA activities showed 33,640 maps, 423,174 Newsletters, 100,000 special reports sent out to members. Letters from AOPA numbered over 42,000—an increase in membership servicing of 6,000 over 1949. Some of the member problems AOPA acted on included flight routing, powerplant failures, tie-down fees, gas tax refunds, income tax deductions, accident investigations, violations of CAR, airport obstructions, medical cases, aircraft maintenance, aircraft purchasing, airmarking, and group flights.

A valuable service begun in 1950 was the AOPA list of member-lawyers. Attorneys listed received lawyers' bulletins on significant decisions of CAB and the courts and contributed information on local cases of interest to private pilots.

As in previous years, AOPA represented private flyers on Government committees for civil air policy—including the new Emergency Aviation Council formed during the Korean war.

Members continued to receive discounts on navigation instruments, fur coats, motor boats, radios and many other products through AOPA Good Deals.

CAR EMBLEM

AOPA members can buy metal car emblems from national headquarters to attach to license plates. The wings are

chrome centered by a black and white enamel shield. Price of emblem and attachments is $1.

SECURITY AREAS

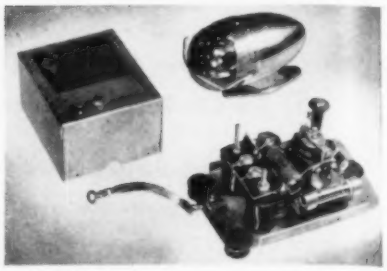
Latest information on the new Air Defense Identification Zones (ADIZ) is available to members in a new AOPA Special Report, "Security Control of Air Traffic."

Coupled with the revised report on flight plans, the ADIZ report will give members the where-when-and-how of filing the now mandatory flight plans in defense areas.

NEW FLASHER

A new navigation light flasher distributed by Van Dusen Aircraft Supplies at Teterboro, N. J., is now on the market for private pilots.

Known as the Blink-R Model BR G-1, the unit weighs 13 ounces and is about half the size of the old Blink-R flasher.



It is shielded to prevent radio interference and can be set to flashing or steady lights. It operates on a 12- or 24-volt electrical system.

An earlier Blink-R flasher is being tested with other flashers for AOPA by Dr. Leslie A. Bryan (AOPA 6534) at the University of Illinois' Institute of Aviation. At the conclusion of the tests, the flashers will have been operated over 500 hours.

AMERICO MOVES

The American Mercury Insurance Co. has moved into new quarters at 4420 Conn. Ave., N. W., Washington, D. C.

Americo is under contract with AOPA to furnish insurance on an exclusive basis to members when they desire certain types of service.

BEST SELLER

AOPA's "best seller" (free to members) is still Max Karant's manual for using omni—Pilot Service Bulletin 13 entitled "Omnigation." Twice revised and widely distributed to members, Government officials, and manufacturers, the guide continues to be number one in membership bulletin requests.

Other subjects covered in the pilot service bulletin series are Central and South American flight information, aeronautical charts, resort airports, and state gas tax refunds.

A list of these bulletins and AOPA Special Reports is available to members from national headquarters.

BAD EYES?

Private pilots with subnormal vision have just as good safety records as those who meet the visual standards, according to the Committee on Aviation Psychology of the National Research Council. The Committee recently completed a research study for CAA which compared flight records of the sub-standard group with those who had met CAA requirements.

OPERATION TOYLIFT

Santa, in the guise of AOPA member Julian J. Reiss of Whiteface Mt., N. Y., flew planeloads of toys to needy children last Christmas. Reiss, treasurer of Santa's Workshop, Inc., distributed the toys in his Stinson. Only sour note on a trip to the children of St. Mary's Home in Binghamton pictured at left was the $2.50 landing fee charged by Westchester County Airport.

Children of St. Mary's Home in Binghamton, N. Y., clutch presents received from Santa Claus (Julian J. Reiss, treasurer of a toy firm) who delivered the gifts in his Stinson.

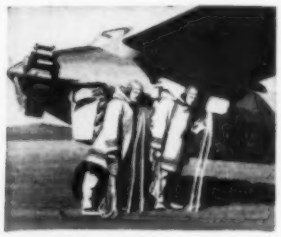
WRIGHT BROTHERS

ADMIRAL BYRD

LINDBERGH

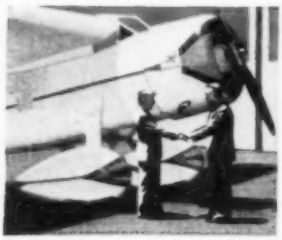
AMELIA EARHART

FIRST WITH THE

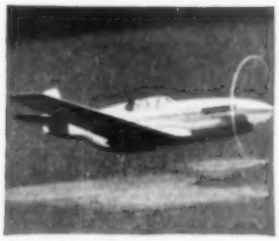


SIR HUBERT WILKINS

KINGSFORD SMITH



WILEY POST



JOE DE BONA

FAMOUS

The Flying Red Horse Flew with them All

• List aviation's most famous names – the Flying Red Horse flew with them all! The reason is obvious . . .

The makers of Mobiloil supplied the first successful oil for the first successful airplane engine.

The makers of Mobiloil have played a leading role, since then, in developing products to meet progressively tougher operating conditions – higher engine power and heat, longer range, greater speed and altitude.

That's why, today, so many major airlines – so many famous pilots – use *Mobilgas Aircraft* for top performance . . . *Mobiloil Aero* for utmost dependability in flight!

Why accept anything less?

Mobilgas AIRCRAFT

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Why Accept Anything Less?

SOCONY-VACUUM OIL COMPANY, INC., and Affiliates: MAGNOLIA PETROLEUM COMPANY, GENERAL PETROLEUM CORPORATION

CAN YOU SPOT THEM?

1 2 3 4 5

6 7 8 9 10

(1) Douglas D-558-1 Skystreak (U.S.), (2) DeHavilland N.F. Mk.36 Mosquito (Great Britain), (3) Fairchild XC-120 Pack Plane (U.S.), (4) Cessna 170 (U.S.), (5) Bristol Type 170 Freighter/Wayfarer (Great Britain), (6) Fairchild XC-120 Pack Plane—with the pod detached (U.S.), (7) Short Mk. 5 Sunderland (Great Britain), (8) Martin 2-0-2 (U.S.), (9) Avro R.Mk.3 Lancaster (Great Britain), (10) Boeing Model 377 Stratocruiser (U.S.).

Lend-Lease

(Continued from page 26)

specification, and then turns it over to the customer for his exclusive use for one year. Beckett hangars it, keeps it filled with gas and oil, makes the regular mechanical checks to insure it is always in top shape. He even buys the insurance, and makes certain that one of his pilots is available on a few minutes notice to fly it anywhere the customer may want to go.

The customer deposits one-third the plane's purchase price (in the case of a *Bonanza*, about $4,000 to $5,000, depending how the plane is equipped) for the term of the lease. He also is billed each month for depreciation, at a rate of one-36th the plane's purchase price (figuring its life at three years). By the end of the year, the customer thus has paid two-thirds the plane's original selling price.

At the end of the year, the deal is over. The customer may buy the airplane by paying the additional one-third. Or if he wishes, Youngstown Airways takes it back at the current market price for the plane. If they can't agree on a current market price, the plane is sold on the open market and the customer gets a refund of the difference between the original price and the price the plane brought.

Thus, the customer gets the use of the plane for a year and stands only the depreciation cost, usually less than one-third the plane's original selling price. He also pays a monthly standby fee for the pilot ($150), hangar rental ($30 per month) and hull insurance at prevailing rates. In addition, operating charges are billed at the following rates: $4 per hour for pilot's flying time, pilot's overnight expenses, gasoline, oil, mechanical work at prevailing rates, and a charge for liability and property damage insurance. The *Bonanza* carries $50,000 and $100,000 personal injury liability insurance, exclusive of passengers; $100,000 property damage, and $100,000 per seat passenger liability.

The fixed charges usually add up to about $600 a month, and operating costs run around five to eight cents per passenger mile, explains Beckett. This varies on how well the company schedules its trips. Some of the companies try to schedule trips so all seats are filled.

Beckett says the plan is excellent for solving the aviation problems of his customers. It provides each, he said, with an operation that is more practical, safer and cheaper than if the industrial user operated his own aircraft.

For example, Beckett explains, the average company rarely has enough flying to do to keep its staff pilot busy. Therefore this plan sometimes costs less for total operation than the salary of the pilot employed by a company might run alone.

"The average industrialist, buying a company plane, is usually somewhat at sea," Beckett says. "He doesn't know for sure just how to select a good pilot. Usually he doesn't know a thing about airplane maintenance. Quite often, his company doesn't fly enough hours each month to keep the pilot busy. Then when the pilot is sick or away on a vacation, or the plane is laid up for maintenance, he has no air transportation.

"But handling those matters for the industrial executive who signs up to use one of our aircraft is our business, and we can't afford to neglect details.

"Too often a company pilot, once he is hired, doesn't go up for check-rides for years—and the executives who ride with him are unaware that he may have lost some of his proficiency, may have deteriorated physically, or may have failed to keep up with the latest procedures. That's why we insist on frequent check flights for our pilots."

Youngstown Airways also has worked out a novel "trade" arrangement for its customers. When one company's plane is down for maintenance work, one of the other companies is asked for use of its plane to "protect" the first customer. Or if one company has two important trips in one day, Beckett points out, one other which has no trips that day is asked to loan its plane for the extra trip. Youngstown Airways takes care of the financial ends of the trade in its accounting.

One of the best things about the arrangement, Beckett says, is the effect on the industrial companies and their executives, and their resultant attitudes toward flying.

"Generally," he says, "the industrial executive is a bit cool at first toward the idea of operating a company plane and riding in a single-engined aircraft. He thinks riding in a big multi-engined airliner is all right—but he's afraid that the small single-engined airplane is impractical, too expensive. And when he does go into it, he goes in with reservations. He figures it will be used only by a few of the company's top ranking men and for emergency trips, only in good weather.

"But within a few months, everyone in the company is competing for the right to use the plane for his trips. And the top notch man has lost his skepticism—he climbs right in to go anywhere and lets the pilot do the worrying."

Beckett says one of the most vexing problems has been to prevent "fights" developing within the company organizations as to who gets the use of the aircraft.

"Of course," he says, "we're eager to get the companies to use their aircraft as much as possible—because their costs come down as the hours of use go up." END

ONLY A FLEET OF C-124s COULD AIRLIFT AN ENTIRE INFANTRY DIVISION AND ALL ITS EQUIPMENT

Quickly the giant Globemaster II brakes to a stop. Its clamshell doors fold back. Down comes the self-contained ramp. And seconds later battle-ready troops are pouring out of her monstrous belly. Nearby other C-124s unload such divisional equipment as M-24 tanks, 155 mm. Long Toms, bulldozers, trucks and scrapers.

A fleet of these new Douglas transports could airlift all the personnel and equipment of an entire 16,000-man airborne division from Boston, Mass., to Brest, France, *in a single flight!*

Designed to meet the vital need for aircraft to support global operations, the C-124 has been ordered in quantity by the armed forces. Already a certain number are in active service.

Over five years of careful planning and development work by Douglas and the military have made possible this revolutionary airplane. Such pioneering is typical of Douglas engineers, who are today turning their attention to advance-type combat planes with jet, rocket and turbo-prop propulsion. Douglas Aircraft Company, Inc.

Skilled engineers and technicians find Douglas a good place to work!

DOUGLAS GLOBEMASTER II

Depend on **DOUGLAS**

WORLD'S LARGEST BUILDER OF AIRCRAFT FOR 30 YEARS ▲ MILITARY AND COMMERCIAL TRANSPORTS
FIGHTERS ▲ ATTACK PLANES ▲ BOMBERS ▲ GUIDED MISSILES ▲ ELECTRONIC EQUIPMENT ▲ RESEARCH

CIVIL AIR PATROL

WING TALK

36 Prizes in Photo Contest

HUNDREDS of dollars in valuable prizes have been provided by FLYING for winners of the new CAP-FLYING Photo Contest. The contest opens on April 1.

Here are the official rules:

1. All members of the Civil Air Patrol are eligible to submit entries.

2. Entries must be black and white daylight or flash pictures which have been taken during the calendar year 1951. Prints submitted must be 8x10 glossy and unretouched. Negatives must accompany all prints. *Do not submit tinted prints, color prints, or transparencies.*

3. Contents of all pictures should be readily recognizable as depicting a Civil Air Patrol activity, even though a caption may not be available. CAP members pictured must be in proper uniform.

4. Any number of prints may be submitted. Each print must have a label affixed to the back with the following information on it: (a) photographer's name and address; (b) CAP rank and serial number; (c) CAP unit to which attached; (d) Group in which picture is entered (see Rule 5); (e) where picture was made, full names of unit or individuals pictured, and descriptive matter to identify the subject and activity.

5. Pictures must be entered in one of the following groups, according to subject matter:

Group I—"The CAP in Civil Defense"
Group II—"The CAP Cadet Program"
Group III—"Search and Rescue Operations"
Group IV—"CAP's Peacetime Missions"
Group V—"General Photos of CAP"

6. All entries—prints and negatives—will become the property of Civil Air Patrol, Inc., and contestants agree by entering the contest that pictures submitted may be used by the Civil Air Patrol for recruiting, promotion, or publicity purposes. Entries will be acknowledged as soon as possible after receipt. Only disqualified prints will be returned.

7. Pictures will be judged for composition, workmanship, technical excellence, and how well they depict the CAP activity in the group in which they are entered. Decision of the judges will be final.

8. Contest opens April 1, 1951, and closes October 1, 1951. Entries must be postmarked no later than midnight, September 30, 1951.

9. Entries should be sent direct to National Headquarters, Civil Air Patrol, Bolling Air Force Base, Washington 25, D. C., and marked clearly: *Attention—Photo Contest Project Officer.*

10. Judges for the contest are three outstanding press photographers: Col. Paul Threlfall, CAP, Advisor to the National Commander; Frank Scherschel, *Life;* and Ollie Atkins, *Saturday Evening Post.*

11. The prizes to be awarded are as follows:

Grand Prize (Best of All Groups)
1 Ciroflex Model F Camera with Case

First Prize in Each Group
1 Norwood Light Meter

Second Prize in Each Group
1 Victor Twin Adapta-Lite

Five Consolation Prizes in Each Group
Krick Weather Guides

Congressional Dinner Called Off

CAP'S Congressional Dinner, originally scheduled for May, has been called off because of the critical international situation, according to information received from National Headquarters. Always well-attended by the nation's law-makers and often by the President, the annual dinner held in Washington, D. C., has been one of CAP's major events.

The Report to Congress, usually made at the dinner, will probably be forwarded to the Congress as a written document.

General Beau, however, has scheduled a meeting of the National Executive Board for March. This meeting, to be held in Washington, will be followed in May by a meeting of Wing Commanders and Air Force Liaison Officers, probably in Denver.

Cadet Program Still in Works

CAP'S International Cadet Exchange is still in the works for this summer. With eight more countries ready to join in the program, there is a good chance that it will be bigger and better than ever. Said to be ready to exchange cadets with this country are Norway, Sweden, Denmark, Holland, Belgium, Spain, Brazil, and Mexico. Already participating in the program are Canada, England, Switzerland, France, Italy, and Portugal.

General Beau is scheduled to fly to Europe this month to make final arrangements for the exchange.

Wing Commanders Appointed

SEVERAL new Wing Commanders have been appointed and others promoted following the January meeting of the National Executive Board in Puerto Rico.

New Wing CO's are Col. Elliott W. Springs, South Carolina; Col. Emmett D. Rushing, Texas; Col. Bennett Crain, Maryland; Col. Wesley H. Barnes, Montana; Col. Frank A. Prather, South Dakota; Lieut. Col. Herbert H. Baxter, North Carolina; Lieut. Col. Roy C. Metcalf, Utah.

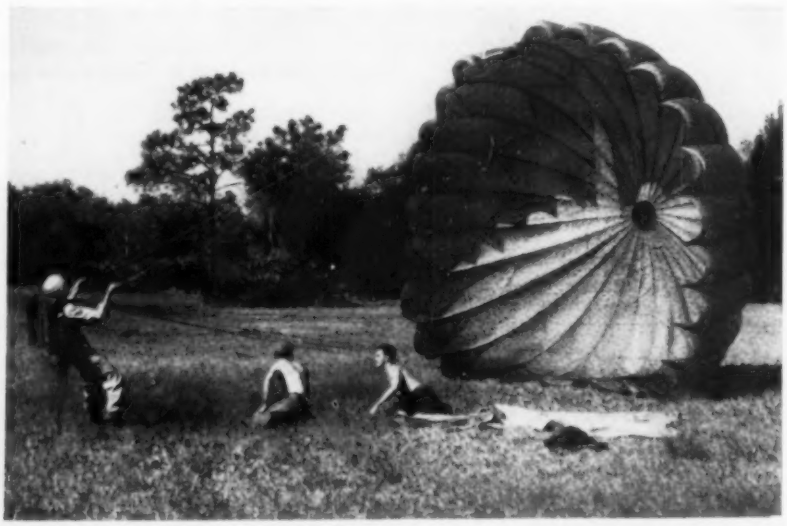
Promoted to Colonel were Wing CO's Earl T. Andrews, West Virginia; Donald Webster, District of Columbia; George G. Wilson, New Hampshire; and Edward Mileski, Wyoming.

New Groups Formed

FLORIDA Wing's Coral Gables Squadron has announced that it has recruited and is training 42 members of B.P.O.E. Lodge 1676 to form the first "all Elk" mobile support unit in the new civil defense program.

Pennsylvania Wing has announced the formation of Allentown Group 8, commanded by Maj. R. I. Beers.

Medical team loads "casualty" during Mobile Support Mission at Hammond, La.



Para-medic phase of air rescue work is shown by member of Miami Group in practice operation SARCAP at Orlando, Fla. Medic will give first aid to "survivors."

"I can't afford not to belong to AOPA"

Says member-pilot

ROBERT CUMMINGS

"I CAN'T AFFORD NOT TO BELONG TO AOPA."

"A little knowledge is a dangerous thing—particularly in flying. Painlessly, quickly and continuously AOPA makes me an authority on the things I should know to safely own and fly any type of airplane and to protect me, my passengers and countrymen from harm, embarrassment and annoyance.

"Thirty-five thousand pilots can't be wrong! Not with this great non-profit association guiding them.

"Thanks—"

Only AOPA gives the private pilot so much at so little cost. That's why more than 35,000 private flyers have joined this greatest of all aviation associations. AOPA gives you more service—more protection—more for your money—and more all-around pleasure out of your flying. Listed below, next to the membership application, are some of the services and benefits that your $5.00 a year AOPA dues give you. Join today—start flying with the greatest group of private flyers in the world.

SEND IN THIS APPLICATION TODAY

Valuable AOPA Services FREE to Members

The Washington staff of AOPA will help you in personal flying problems, licenses, regulations, legal tangles, documents, plane sales and purchases. Also national AOPA-Hertz Driv-Ur-Self courtesy card; AOPA Washington Newsletter; each month the special AOPA edition of FLYING magazine; TWA-AOPA courtesy card assuring service and maintenance facilities at most TWA airports, advantageous aviation insurance service; distinctive AOPA pilot's wings, emblems for your plane and car, and membership card. Above all else, AOPA continuously protects and fights for your flying interests in government and other circles.

AIRCRAFT OWNERS AND PILOTS ASSOCIATION
National Headquarters, Dept. F-4-51
Washington Bldg., 15th and N.Y. Avenue, N.W.
Washington 5, D. C.

I first soloed an airplane at.....in the year.....

I own aircraft NC.....Make.....
I hereby apply for membership in AOPA

I was previously an AOPA member.....

My registration number was.....

Enclosed find check or money order for.....
(U. S. A., Canada, Mexico, Central & South America, $5.00.
All other Foreign, $6.00.)

NAME.....
Please Print

ADDRESS.....

CITY & STATE.....

PILOT LICENSE NUMBER.....

SIGNATURE.....

$1.80 of each year's dues are for my subscription to the AOPA Edition of FLYING.

"AOPA"
AIRCRAFT OWNERS AND PILOTS ASSOCIATION

Shortages

(*Continued from page 27*)

Standardization Coordinator. He did similar work during World War II as a colonel in the Air Force. Gaillard served on Gen. H. H. Arnold's staff and was assigned to the Working Committee of the Aeronautical Board, where he was connected with the Standardization, Conservation and Allocation Committees of the War Production Board.

Where will Gaillard recruit his staff? The staff will be recruited partly from CAA, where there are a number of men whose war experience qualifies them for this kind of work. One key assistant is Bion Williams, CAA statistics expert, who served alongside Gaillard during World War II.

What are Defense Orders? These are usually called "DO's"—which will become a magic designation in the next months. All civil aviation considered essential during the emergency will be kept supplied by these DO's and those issued by CAA will have the same force and effect as any DO's issued under the direction of the National Production Authority (NPA).

What was the first action of the Office of Aviation Defense Requirements? It issued DO's covering new air transports on order by U. S. air carriers and a few others, including business firms, as of November 1, 1950. These orders involve 113 aircraft costing $95,770,000 which are to be delivered in 1951; and 84 aircraft, valued at $78,080,000, which are to be delivered in 1952.

Who will consider and judge future new aircraft needs for U. S. scheduled air carriers? The so-called "claimant agency" in future cases will be the Civil Aeronautics Board which will go before the NPA for the necessary priority assistance. The CAA, which also services the civil aviation industry as a claimant agency, will serve in the same capacity for maintenance requirements of the airlines.

Where will other forms of essential aviation get authority to procure emergency maintenance equipment? The program for these groups, such as agricultural and industrial flyers, is now being worked out by CAA. It's the general feeling in Washington that this type of civil flying will need priority assistance. The procedure for supplying them will be established as soon as a definition of "essential civil flying," acceptable to military and NPA, can be established.

What will be considered "essential" flying? That's not easy to define this early in the emergency. It will probably include much of the agricultural flying by which necessary food crops are treated economically from the air; many varieties of industrial flying such as pipe and powerline patrol, insecticide spraying, some executive flying, some flying by private owners—and other types of flying in which the airplane is definitely a "tool of the trade." A more accurate listing of essential flying jobs may be expected later. Meanwhile, private pilots generally will buy their needs in the open market through their own efforts.

15 YEARS AGO

FROM the April, 1936, issue of this magazine:

Editor John Rathbun commented: "It's early in the season, but rumors of super-speed racers are being spread around . . . The last rumor concerns a winged engine clocked at 365 m.p.h. Sounds to me as if our correspondent got his m.p.h. confused with the days in the year . . . When they do a burst of 365 m.p.h. at the Nationals I'll be in such a condition that I will not . . . care about it."

The Percival Mew Gull, a streamlined monoplane powered by a 200-h.p. *Gipsy*

Six engine, won the Cardiff-London Air Races with a top speed of 218 m.p.h.

RAF pilots "invented a new sport"—bagging rabbits with their planes—that required "proficiency in crazy flying, hedge-hopping and other amazing types of sky technique." The idea was to skim an inch or two above the ground and hit the unlucky rabbit with the wheels.

A plastic-coated wood aircraft, designed and built by Harry N. Atwood of Milford, N. H., flew more than 130 m.p.h. on its first flight. The single-seater, powered by a 36-h.p. Aeronca engine, weighed only 500 pounds and cost about $1 per pound to build.

King Edward VIII, an ardent aviation enthusiast, purchased two DeHavilland

Dragon-Rapides. The five-passenger *Rapide* cruised at 133 m.p.h. and had a top speed of 157 m.p.h.

TWENTY YEARS AGO

The first Cub, built by Taylor Brothers' Aircraft Corp., was priced at $1,325. Powered by a 35-40-h.p. Continental engine, the *Cub* had a top speed of 72 m.p.h., cruised at 62 m.p.h. and landed at 26 m.p.h. The company claimed that students could learn to fly the plane in two to four hours because of its unusual stability and maneuverability.

Can foreign aviation concerns buy materials in the U. S.? Needs of foreign aviation, including countries within the Marshall Plan, will be considered by the Economic Cooperation Administration, which will act as claimant agency for Marshall Plan nations. Requests for aviation products from countries not within the Marshall Plan will be in the hands of the Office of International Trade of the Department of Commerce.

What's the process for getting emergency assistance in the matter of maintenance materials? The air carrier will come direct to the CAA in Washington with its request.

All other parts of civil aviation needing emergency assistance will come to the CAA's regional offices. There, their requests will be screened. One important action in that screening will be to determine that the applicant has made every effort to get the materials himself. Only when he has satisfied authorities that he has real need and cannot satisfy it through his own efforts will the application be taken to Washington.

How does the over-all program operate? The procedure was established through the Air Coordinating Committee as the nation's top policy-making aviation body. Each claimant agency will submit its program for essential civil aviation needs to the CAA Defense Requirements Office. This office will collect these requests and forward them to the ACC, where an Aircraft Claimant Division (composed of all claimant agencies) has been established. The ACD decisions will be forwarded to the NPA for guidance of this authority, thence to the Munitions Board where the civil needs will be integrated with the military, and then will be assigned to the CAA Defense Requirements Office for processing of the DO's.

Is this a permanent procedure? The CAA office has been asked to handle the paper work for the whole civilian program. It is generally understood, however, that the DO system will undergo changes later when a Control Materials Plan is worked out.

How can airports get essential needs? In addition to issuing DO's for airways maintenance requirements, an essential activity for all types of flying, the CAA is now assembling data for use by the NPA in determining the needs for airports deemed essential for air transport.

Is there a general rule-of-thumb to determine maintenance needs of air carriers? The U. S. and foreign carriers have been spending roughly $2,000,000,000 a year for maintenance needs. As the carriers have submitted to CAA their record of past purchases of this kind, they have been given authority to use DO ratings for an amount approximately equal. Most of them already have filed their requests, and the dollar total of potential approved purchases now totals about $35,000,000 per quarter. The CAA office has established an accepted procedure for DO's covering this amount of purchases. END

Fighter Captain

(*Continued from page 20*)

reached up and pulled off the pitot tube cover and radio altimeter cover. He unscrewed the jury struts that secured the folding wings.

After removing the wires that hold the big jet's elevators and stabilizer steady, he picked up the parachute he'd lugged from the line shack at the foot of the carrier's superstructure and deposited it in the cockpit.

All over the deck, plane captains were doing the same kind of job—clambering over their aircraft like ants. Twarek climbed down from the wing and looked quickly for cuts in the tires, then made a fast tour around the streamlined fuselage to see that there weren't breaks in the laminated skin.

He was up in the cockpit when I got back to the plane.

"Hi, Twarek," I yelled against the wind. He looked down from the cockpit, grinned and waved, but didn't have time to talk. He was settled back in the seat, and—one by one—was going over the cockpit switches to be sure they were all turned off. Later, he said: "You've got to do that to make it easy on the pilots. They have got a lot on their minds."

Twarek squinted through the rounded Plexiglas in the canopy. It had a dull gleam in the early morning light, but he fished a rag from his pocket and swiped at a spot on the port side. Satisfied, he shoved the rag back in his pocket and like a perpetual motion machine hauled himself out of the cockpit and dog-trotted back toward the island structure where he got some hydraulic oil. Back at the plane he oiled the oleos.

As the minutes passed, Twarek busied himself about the big blue jet—his hands never still, his pace hardly slackening.

The pilot, Lieut. (j.g.) Leonard Pittman, 29, of Wichita, Kan., showed up shortly before time for take-off. "She's lookin' pretty good this morning, sir," Twarek said.

He climbed back up on the wing with Pittman and stood alongside the cockpit, strapping the pilot in. He reached over and gave a tug at the shoulder straps, and helped set the safety belt. "That's pretty important," he told me. "It all fits together to keep him from slidin' all over the cockpit."

When Pittman was set, Twarek jumped down from the wing and stood forward, looking toward the electrical officer ahead of him. A yellow jeep approached and stopped, and a sailor hopped out to plug in the jump cord from the jeep's automatic starter. The electrical officer signalled to Twarek who gave a thumb's-up to the pilot. Then the jeep driver turned on the power.

The jet hummed, then picked up to a shrill whine. The pilot signalled Twarek with his thumb. The plane captain passed the sign to the jeep operator, who yanked the cord. Then, crouched low to brace himself against the prop and jet blasts that swept over the flat deck surfaces, Twarek gave a quick look under the

MEN WITH SKILLS

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Radio repairmen are among hundreds of kinds of skilled specialists . . . men who keep your U. S. Air Force on top . . . needed now by your Air Force.

Men with training as former specialists in any service . . . or non-veterans with special skills . . . are needed to support America's growing air power. Radio, radar, maintenance, weather, armament, camera repair, and many other technical skills are wanted.

For your skill, your Air Force offers better pay and opportunities than ever before . . . in a great Air Force you'll be proud to serve, with a rewarding sense of a job well done in your nation's defense.

Find out where you fit. Visit your nearest U. S. Army and U. S. Air Force Recruiting Station now . . . and get details of these new Air Force offers:

VETERANS: You can now enlist, if qualified, in your old grade *or better* . . . skip basic training . . . and be assigned initially to a nearby Air Force Base.

NON-VETERANS: You can enlist for basic training . . . and get a rating to match any critically needed technical skill or training you have.

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plane to be sure that the starter connection door was closed.

Up ahead, a yellow-sweatered plane director held his arms high—then pointed his thumbs outward. Twarek reached under the jet and yanked out a chock while on the other side a "plane-pusher" pulled the other one away. The high scream of the jet knifed through the air, and the plane moved slowly forward toward the catapult. Twarek, still crouching, followed it and stood beside the catapult as the plane was hurled off.

He watched the jet accelerate off the end of the flight deck and dip almost lazily to the left—heading toward the Korean front.

He went back to pick up his chocks and put them away, then walked slowly toward the line shack, a little cubbyhole in the steel fortress of the island.

While the jets were on their 90-minute sweep he'd have a little rest—one of the few respites in an action-filled day. He dropped on his haunches and closed his eyes. Other plane captains sat around —guys like Ray P. Stanislawczyk, 21, of Flizabeth, N. J., and Joseph P. Kanapsky, 20, of Hamtramck, Mich. When they didn't catnap, they talked about the war, or their girls back home, or about mail.

Twarek roused himself in the middle of a conversation to make a prediction. "I figure it'll be a big mail call after the ship replenishes day after tomorrow." He'd written a dozen letters in the past few weeks but the ship had moved so unpredictably that the mail from home hadn't arrived.

The 90 minutes passed quickly. Shortly before the time the jets were due back at the carrier, Twarek went over to the catwalk that runs alongside the flight deck and scanned the horizon.

Off in the distance the jets appeared, wheeling over the carrier and slipping into the pattern. As Number 112 hit the deck Twarek jumped off the catwalk and when the jet taxied into position he chocked it and secured a line from its nose to the deck.

The pilot climbed out and headed belowdecks for his de-briefing session with intelligence officers. Twarek didn't have a chance to learn what the planes had done over Korea. Neither he nor the pilot had time to talk.

The whole process was started in reverse—the covers put back on, the tiedowns secured, the plane checked. In a lull, Twarek headed below for a quick lunch, then was back at the plane while the decks were re-spotted for another launch and another mission.

Shortly after four o'clock he got away from the plane for a few minutes and spent a dime at the ship's "Ge-Dunk" stand for an ice-cream cup.

But he wasn't able to dawdle. Each squadron has a line chief who supervises all aircraft and a maintenance chief who is in charge of all maintenance. Under these men are hydraulic crews, structures crews, powerplant crews, electronic crews and ordnance crews. Each crew has one vacant spot: the spot that's filled by Twarek when Number 112 needs service, or by any plane captain whose plane happens to be in the shop.

It's not a civilian-type job. There are no whistles for starting work and no whistles for stopping; the plane captain and repair crews work night and day until the job is done.

And in combat, the job never seems to be completed. The plane captain, like every other member of the carrier crew, leads a busy life. Unlike some of the other carrier personnel, however, he seems to have no time to himself. He seldom attends movies (shown in the crew's compartment) or lies around his compartment at night listening to the 45-r.p.m. record player owned by one of the sailors.

Before Twarek joined the Navy he worked for General Motors Products in Sandusky, O., making ball bearings. "It was the same old thing day-in and day-out," he told me. "I had my mind set on joining the Navy and getting some schooling. Take me, I never thought I'd get out of Marblehead or Sandusky before I joined the Navy. Now I've been to the Mediterranean and all those countries over there and I've been through the Panama Canal and out to Hawaii.

"Gee, I'm getting a pretty big kick out of it."

But sometimes Twarek is a little too tired to get much pleasure from Navy life. When the Navy fights a war, the hours are long. To do his job in combat, Twarek works about 19 hours a day—and averages about five hours' sleep. He has worked as long as 48 hours at a stretch, catching only catnaps in the cockpit of his F9F.

If the plane is gassed, Twarek does the job. If the engine is overhauled, he lends a hand. When the radio is checked, he stands by to help. He ties the plane down at night, rides the controls when it's moved on deck, washes and polishes it when it's dirty.

And always, when Number 112 goes into combat, Twarek is the last man to talk to the pilot and the first man to hop on the wing when the plane returns.

If any one man could be said to "own" Number 112—$350,000 worth of airplane —it's the 21-year-old plane captain from Marblehead, O., a sailor who has never had a jet ride!

"Like I say," Twarek told me, "I sort of get a kick out of it. If I hadn't joined the Navy, I'd of still been in my home town, doin' the same old job."

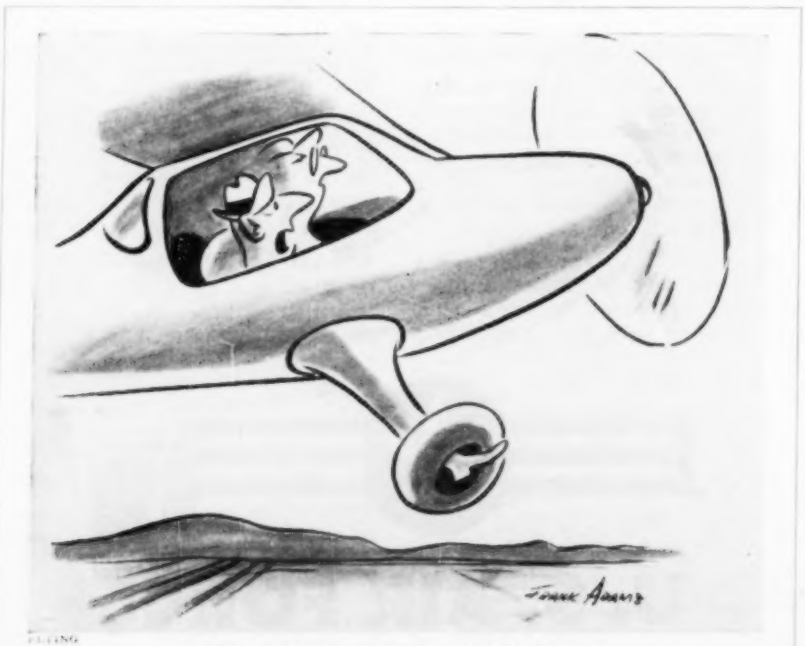
The job Twarek was doing when I last saw him was not "the same old job." The time was 11:30 at night and Twarek was in his plane down on the hangar deck. In the sky, a jet looks tiny and clean and simple. But on the hangar deck, Number 112 appears gargantuan compared with the little man who sits in the cockpit.

When I yelled at Twarek he looked down. Then, with an effort, he pulled himself out of the seat and climbed down the shiny side of the fuselage.

"Have you talked to the pilots?" he asked. "Any of them tell you anything?"

They'd been over Korea most of the day, strafing communications and troops. Twarek had been too busy even to listen to strike announcements over the ship's squawk box and when I told him about the jet sweeps he laughed. He didn't say anything—perhaps because he was too tired to talk.

The hangar deck was filled with planes, buzzing with machine shop noises, the clanging of metal and the rumble of aircraft moving overhead on the flight deck. As I left Twarek he stood by Number 112. "Looks like we'll get to hit the rack pretty soon," he said as I left. "But right now we gotta stick around. They're goin' to re-spot the planes pretty soon. We got an early mission tomorrow." END



"The thing I like about it is the unlimited leg space . . ."

Industry's Air Lift

(Continued from page 34)

that no other country could even begin to match. This must be emphasized again and again lest some hothead in an emergency, unaware of the facts, should take some foolish action that would curtail rather than expand this essential means of transportation.

The Aviation Development Advisory Committee inventoried the advantages of these airplanes in its report of last August 28 and found that they would be of incalculable value in keeping the wheels of industry and of agriculture rolling.

But in a more serious emergency, note this statement from the ADAC report:

"This country has a non-military, non-airline airlift capable of flying a maximum of 112,056,552 seat-miles each 12-hour day, simultaneously carrying 191,839 persons, or the equivalent of 12½ divisions of troops, augmenting our foreign and domestic airline airlift of total 48,279 seat capacity."

These civilian aircraft are of all kinds. At Southwest Airmotive we deal largely with multi-engined airplanes, converted B-25's, B-23's, and A-26's (now called B-26 *Invaders*), Lockheed *Lodestars*, C-47's, and even larger.

Glenn McCarthy's flying stable boasts a four-engined Boeing *Stratoliner*. Atlas Supply Company of New Jersey has used its DC-4 as a global "Sky Merchant." The oil industry has a veritable fleet of airplanes in Latin America. Arabian American Oil has 15 airplanes, including two DC-4's equipped for overseas transport duty. Among the big companies that we alone deal with are General Motors, Knox Glass, the St. Louis *Post-Dispatch*, Dow Chemical, Goodyear, Goodrich, Continental Can, Brown Paper Mills, American Totaliser, Forstmann Woolen Mills, Weirton Steel, Alabama Dry Dock & Shipbuilding, Kraft Cheese, Consolidated Steel, Rahr Malting, and many others.

There are Beech 18's, Grumman *Mallards*, and hundreds of fast single-engined executive aircraft. In the nation there are more than 2,300 Beech *Bonanzas*, approximately 2,000 *Navions*, and hundreds of Cessnas, Bellancas, Pipers, and other four and five-placers. There are Stagger-Wing Beech 17's, Howards, Spartan Executives, Aeroncas, Luscombes—virtually every kind of airworthy plane known in this country.

The revolution in transportation they have created is in turn revolutionizing business. For an example of how, let's take a day in the life of Fred Dick, bemustached 40-year-old pilot employed by Southwestern Public Service Company at Dallas.

Fred Dick soloed in 1929, barnstormed, put in a five-year stretch as a Lockheed test pilot. He was one of the men who put the *Constellation* through its initial paces. Fred met his present employer after the war and has since been squiring the Beech D-18S *Southwesterner* about the country.

There's no clock-punching for Fred Dick. He and his airplane based at Southwest Airmotive are on call 24 hours a day. One of his regular jobs is to conduct a "director roundup." At 4 p.m. on those days, Fred takes off empty for Roswell, N. M., 460 miles away. At 9,000 feet Fred levels off, settles the *Southwesterner* down to a space-eating 200 m.p.h., and sets his radio to home in Roswell.

As he passes a Dallas-bound airliner, he knows that he is as well equipped for communications as a commercial DC-3. At about 6:30 p.m. his plane slides down through the shadows into Roswell—and he has completed the first and simplest leg of his mission.

Fred spends the night in a Roswell hotel and first thing the next morning he calls the field to check weather. After a quick breakfast he sets out for the airport, inspects the plane, and gets it ready to roll. Promptly at 7 a.m., Hiram Dow and Gale Armstrong, prominent Roswell citizens and directors of Southwestern Public Service, alight from a car, step briskly to the plane, greet Pilot Dick, and climb aboard.

An hour later the plane lands at Amarillo, 215 miles distant, and SPSC President J. E. Cunningham and Director Don Harrington enlarge the passenger list to four. Forty minutes later, Director Clifford Jones is picked up at Lubbock (115 miles) and the cargo is complete. It takes Fred an hour and a half to fly the 295-mile skyway to Dallas and glide in at home base.

Meanwhile, President Cunningham and Director Armstrong have taken turns riding in the co-pilot's seat, each displaying a working knowledge of the controls and even holding the plane on course for short periods of time. Their deep personal interest in the aircraft and their familiarity with its operation are tributes to Fred Dick's sagacity in "selling" his employers on executive aviation. Board Chairman H. L. Nichols often flies the plane with Dick beside him, and Dick says that, in an emergency, the distinguished white-haired Mr. Nichols could land the Beech single-handed.

By 10:30 on the morning of their departure from their homes, the five are in Nichols' office in the downtown Mercantile Bank Building. In mid-afternoon the directors' session is completed and the air-minded quintet returns to the airport. Before dark all are back within their family circles, hungry and ready for the dinner bell.

Fred Dick, meanwhile, is back in Dallas ready for another call. He says that an airplane is like a horse in that it must be used frequently and wisely. It can eat a lot of oats if kept in the barn. Southwestern Public Service Company uses its Beech D18's over 100,000 miles per year, and estimates the operating cost at $24.67 per hour, excluding the pilot's salary, aircraft depreciation, and insurance. This is 500 air-hours, equivalent to 2,500 railroad hours.

Dick's are the routine aerial tasks that are coming increasingly to occupy more and more businesses who sense the enormous advantage in time and money sav-

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LOGGING TIME

WITH HY SHERIDAN

Captain, American Airlines

STEERING COMMITTEE

What with all these new automatic flying devices, it's getting so the airline pilot is almost unnecessary. The latest gadget, hatched by Eclipse-Pioneer, is a dilly. It's an electrical device that allows the tower operator to steer the airplane after the landing is made.

This sort of thing can easily become dramatic.

An airliner is taxiing down a crowded parking platform when the night air is rent with a tinny crash as the plane smashes into a parked aircraft. The tower man complains bitterly over the radio, "Why don't you look where you're going?"

And the captain replies, "Who, me? I thought *you* were steering it."

* * *

DEFINITIONS

A nut is a fellow who has lost the thread.

* * *

Women are people—after a fashion.

* * *

CAUSE FOR WORRY

Seems that many of our philosophers and anthropologists are pretty worried about the quality of the more or less human species. They point out that since the beginning of history war has killed off our best people while the unfit ones stayed home and propagated. When war starts it is a case of begin the begat.

* * *

Many a man thinks he is being cultivated when he is only being trimmed.

* * *

POLITICS

The one good thing about the political situation from the Republican point of view is that the Republicans have been out of office so long they are now associated in our minds with the good old days.

* * *

There will even come a time when *these* days will be called the good old days.

* * *

MY OWN NOTEBOOK

I read "Betty Skelton's Notebook" every month and have often wondered what the little lady is like.

Well, I had lunch with her the other day and have never been so shocked in all my life. Too many years ago I used to be one of those acrobatty flyers myself and I was wont to stride when I walked and to spit out of the corner of my mouth, for that sort of work took a he-man, you can bet on that.

But take a look at this Betty Skelton. Although she comes fully equipped, she doesn't weigh over 100 pounds. She didn't wear any make-up that a man could notice and girl showed right through, a novel idea that could well be followed by our usual female totem poles. She was dainty and feminine and looked as though she belonged in the garden scene in "Gone With the Wind." She even blushed now and then.

Now, fellows, stop and think that this cute little girl makes a practice of slow-rolling her airplane on take-off. Let this be a warning to you, lads. You can't tell by the looks of the outside what's going on in the inside.

* * *

NOW IS THE TIME

A leading politician whose writings have given him some prominence was leaving a hotel by the side entrance. The way led through the cocktail lounge. The proprietor rushed up and asked, "Sir, wouldn't you like something on the house?"

"I sure would," the politician replied, "and something on the Senate, too."

* * *

The reason that Russia is attacking us now is that she does not dare wait. After we have been hardened by a few more years of television we will be unbeatable.

* * *

TELEVISION AGAIN

In no manner has man exhibited the high order of his mentality more convincingly than in the ingenious methods he has devised for avoiding thought.

* * *

The trouble with Hollywood plots is that they seem to be directed against the audience.

* * *

THE REAL REASON

Some misty-eyed people want to promote peace by bringing about international understanding. This is a benighted idea. The United States and Russia now are in conflict because they *do* understand each other.

* * *

ATTENTION, GENERAL SHERMAN

In Korea, one GI was overheard saying to another: "I wish we'd have war. This peace is killing me."

* * *

Many a pilot is satisfied with half a loaf because he is half a loafer.

* * *

EPITAPH

Here lies the body
Of one who was hasty;
Sour as a pilot,
But the worms find him tasty.

ings that aviation offers them. But there are emergencies, too. They are more spectacular and receive more attention possibly, than is warranted by their relative importance, but they are there. For example:

Carl Lund is the blond pilot of a Lockheed *Lodestar* owned by International Paper Mills. An accident at the mill in Louisiana knocked out the power supply and idled the entire plant at a devastating $60,000 per day loss. Lund at the time had the plane on business in Mobile, Ala. A quick telephone call sent him to Atlanta where a General Electric representative met him at the airport with necessary repair parts. Lund completed his race against red ink in time for the mill to resume operations with only one-half day's loss. Savings: $30,000.

Jean Hoffman, chief pilot for Kaiser-Frazer, Willow Run, Mich., cites numerous cases where company aircraft kept assembly lines going by delivering critical raw materials and parts. Several years ago, when the company was fighting for quantity production, a K-F Twin Beech shuttled from the plant to Indianapolis and flew in enough exhaust manifolds to keep things going at peak. Again, a shuttle system from Buffalo brought in 23 tons of badly needed sheet steel.

Knox Glass Associates, Inc., of Knox, Pa., was opening a new plant in Denver. The plant manager called R. R. Underwood, president, 1,600 miles away and advised him of difficulties met in lubricating machinery at Denver's high altitude. Underwood quickly briefed a staff of engineers and the company plane took off from Oil City, Pa., at 4 p.m. At 1 a.m. the next morning, the engineers were on the job at Denver and the difficulty was corrected by 7 a.m. of the same day using a special oil brought in by the plane.

We are watching airplanes do this sort of thing every day. Is it any wonder that we feel proud to be part of such a revolutionary industry? Of course we got in the industry near its beginning and have ridden it on the upgrade. In the past 10 years our sales have increased from $186,000 to approximately $2,250,000. But this, as much as anything else, is an index of how business flying has grown and how important it has become.

I have repeated these facts here to get them on the record. Business flying has become of overwhelming importance in this country just in helping to carry on business. But above and beyond that is its equal or greater significance in potential emergencies. During the terrible Texas City disaster some time ago, when a ship blew up in the channel, scores of private planes were put into service flying doctors, nurses, blood plasma, and supplies from outside into the stricken area. Some returned carrying the injured.

A Texas City official informally said that another 200 lives might have been lost without the help of private aviation. In another and greater disaster or series of disasters, private planes would be immensely, incalculably more valuable. Let us all hope that our policy makers in Washington will realize this and remember it! END

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999 Survived

(*Continued from page* 31)

of the men were treated by native remedies. In Bougainville, open wounds were treated with poultices of papaya leaves. On one Solomon Island, natives supplied hot coconut oil for a man to pour in his wound. Then they bound the wound with leaves. When quinine or atabrine gave out, one man was given the native remedy of wood ashes washed down with hot water. He reported "considerable relief" from his malaria. This same treatment was reported to be very effective for dysentery.

Lime juice was squeezed into coral cuts, insect bites and leech sores in Micronesia. In Burma it was reported to be most effective on the leeches which abounded there—more effective than pulling, cutting or burning them. Men with stomach disorders were fed the fruit, juice or leaves of papaya plants. Very sick flyers were fed the gelatinous meat of very young, green coconuts. This material is exceptionally digestible and in the Solomons it is fed to weaning babies and toothless old men. In North Borneo, a sick pilot was cared for by a woman designated by the chief of the tribe. Several times a day she fed him partly chewed foods and regurgitated rice.

The coconut was the life saver of the South Pacific. This nut can be eaten from its first stages of development through germination. Dr. Howard writes:

"Very young coconuts contain only liquid. As they ripen a gelatinous layer of material is deposited on the shell and this later becomes firm and white in color to form the meat of the coconut. When the seed is fully mature and falls to the ground the embryo develops a spongy cottonlike mass of absorbent material which fills the center of the coconut. From this the young coconut seedling derives the nourishment it needs for growth. The coconut is edible in all of these stages. The gelatinous material, called *kulau* in New Guinea, is a delicacy and easily digested. The mature coconut is eaten plain, or more often it is grated to aid digestion. The cottony material is eaten raw and has a sweet flavor; it may be sliced and toasted or fried. The tender bud of the young plant can be eaten raw and is often called 'coconut celery' or 'coconut chestnuts;' it may also be cooked as a cabbagelike vegetable."

One Navy pilot landed on an island which had a few palms with a total of 32 coconuts. Although there were birds, crabs and fish on the island or offshore, he lived on the 32 coconuts until he was rescued.

All manner of strange and outlandish foods were eaten. Dr. Howard noted that if a man was alone he tended to be more venturesome than if he were in a group —apparently social pressures governed even the protocol of starvation. But much was in attitude. Some men thrived on jungle fare, others starved on it. In one case two flyers were downed in similar parts of Burma. One man found nothing familiar to eat and therefore ate nothing. The other reported a surplus of edible foods and never had any trouble finding food.

Here are some of the things that were eaten—sometimes with relish: bananas (by 40 per cent), plant stew, monkey meat, white lizard meat, rice, boiled dog meat, water beetles, birds' eggs, yams, caribao milk and steak, hard-boiled eggs, cabbage stalk, rice flour, popcorn, beans, carrots, cassava, peppers, pineapple, cucumbers, limes, papaya, peanuts, peas, radishes, sago, squash, tomatoes, water melon, wild cherry, fish, shark, duck eggs complete with embryos, crabs, lobsters, goat, palolo worms, ants, berries, palm cabbage, sugar cane, breadfruit, minnows, birds, grubs, butterflies (they tasted faintly of meat and were better than grubs and locusts, one flyer said).

In India one meal prepared for downed pilots consisted of chopped up "June bugs" in rice, with fried "June bugs" sprinkled liberally over the top.

Snakes made good eating to some survivors. One pilot down in the Solomons spied a small python, made a noose out of vines, slipped it over the snake's head, and strangled it. He skinned it, wrapped it in leaves and baked it. Said it tasted like chicken. In another case two men were attacked by a snake which coiled around one of them. The other killed it and they had snake for supper that night.

One man who killed a monkey and had no matches to start a fire was forced to eat it raw. He complained it was tough. Fifteen cases of eating monkey meat were reported and only one man thought the monkey looked too human for him to stomach. One man caught a swamp rabbit and ate it completely, including the entrails. He must have been hungry.

The survivors appeared uniformly to approve of lobsters which were caught mostly along the ocean, though a few were found on the shore. They ate the tails alone or baked the entire animal. It was not unusual for men to rustle up a stew of rice, greens and lobster meat. In Polynesia, some flyers ate palolo worms, which swam on the surface of the ocean during a reproductive period. One man complained that when eaten in excess they caused severe diarrhea.

The wild life that caused the most damage to the men were not tigers or leopards or elephants or creatures of that sort, but mosquitoes and leeches. In Burma men found they had to stop every hour and strip off their clothing to get rid of the leeches. They dropped from trees and were on every blade of grass, every bush and leaf. They crawled through button holes, flies and even through the eyelets of their shoes.

Once they had obtained a good hold they were difficult to remove. It is important to remove all of the head and mouth parts of a leech in order to prevent secondary infection from its bite. Juice of limes, salt, potassium permanganate crystals, tobacco juice, lighted cigarettes, and so on were used with varying success. Standard repellents caused the leech to withdraw its head.

Mosquitoes were a terrible pest but standard repellents worked on them. Yet the hazards of the jungle to the uninitiated were terrifying. One pilot landed his plane in a New Guinea swamp only 20 miles from base. He believed he could find his way back to base without trouble and started out walking, leaving all his equipment and supplies in the plane. Thirty-six hours later a native search party found him three miles from his starting point, mired to his shoulders in a swamp, covered with a layer of mosquitoes from the water line to the top of his head. He was completely exhausted and had to be carried back to his base in a litter.

Lice were a common pest and survivors generally acquired them by sleeping in native huts. After one experience they usually swore off accepting this sort of hospitality.

Only two cases were reported of men being attacked by sharks. One flyer lost a leg when swimming off a reef in New Guinea, but survived the episode. In the other case a pilot and his gunner ditched. The gunner was wearing white undershorts and removed his trousers. Sharks nosed him several times and finally one bit his right thigh. The man was pulled under but broke free and bobbed up, shouting for help. Sharks continued to attack him, biting and pulling him under until he drowned. The sharks pulled at the body until it disappeared, then continued to follow the pilot. He splashed at them and hit one shark on the snout. The shark turned quickly, hit the pilot in the face with his tail, broke his jaw, and left abrasions on his face. The sharks then left, however, and were not seen again.

Survivors generally were well treated by natives, though some were turned over to the Japanese by collaborationists. In only one case were women found to have caused trouble. A flyer in the Philippines made a pass at a native

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

AIN'T IT THE TRUTH?

"Thought some other FLYING readers might get a kick out of this sign which hangs in the flight office of the Harlem Airport in Oaklawn, Illinois."

PILOTS are men who start out knowing a great deal about very little and go on learning more and more about less and less until they know everything about nothing.

RADIOMEN start out knowing very little about a great deal and go on learning less and less about more and more until they know nothing about everything.

WEATHERMEN start out knowing everything about everything, but end up knowing nothing about nothing due to their association with pilots and radiomen.

—DONALD R. WITT

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

wife and the husband promptly turned him over to the Japanese troops.

Oddly enough, men who contacted individual natives usually received better treatment than those who contacted groups. Throughout the Pacific it seemed that individual natives took pride in their "survivor" and pampered him. On the other hand, a survivor cared for by a group was group property and no one was responsible for him and, therefore, he received inferior attention.

Native help was more satisfactory if the flyer was the brunt of a joke. If he was dirty, awkward, or helpless he usually was treated better than if he was able to care for himself. One man had trouble taking the continuous laughter of the natives at him, but realized that it was saving his life.

Many flyers found that the most valuable objects for barter were rock salt, twist tobacco, and opium. This was in areas where they seldom or never came in contact with Occidentals. While local governments did not approve of the indiscriminate use of opium, it was often given to the pilots by chiefs of remote tribes (as in Lololand) to use as barter.

The ingenuity of some of the downed men is amazing. One survivor in Borneo obtained an outboard motor for a small boat he stole from the Japanese. He was able to find a barrel of high test gasoline but he needed lubricating oil. He planned his trip carefully to coincide with the next late moon and meanwhile he carefully accumulated a pile of coconuts. He grated the meat and extracted the coconut cream. He allowed this to stand and finally drew off a gallon of pure coconut oil. This was enough for his needs, and with oil, gasoline, boat and motor he was able to escape.

Two items of enormous importance to the downed pilots were good shoes and their parachutes. The best shoes were the standard G.I. high-top shoes. Yet 25 per cent of the survivors interviewed had been wearing low-cut shoes. Many of these were lost by the force of the parachute opening. The Australian or Brazilian boots so often worn rarely held up. One survivor found his Australian boots useless after two days of travel. The shoes had shrunk and were warped by the water and the soles had separated from the uppers. He was so impressed by their failure that he carried these useless shoes around his neck for 47 days to show others on his return.

Parachutes turned out to be extremely useful for many things. They were used for shelter, to wrap the body for warmth, and for insect protection. They were used for leggings, and for improvised foot gear. One man who had a complete sewing kit in his pocket made himself a suit, complete with trousers, vest and coat from a double layer of parachute cloth.

Survival equipment used by the downed pilots varied in effectiveness. The signal mirror was especially useful when the survivor knew how to operate it. Flares, dyes and parachutes and signal panels all helped guide rescuers to the lost men. The "Gibson Girl" emergency radio did help in some cases but

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BETTY SKELTON'S NOTEBOOK

FLORIDA AIR SHOW

The Florida Air Pilots Association did a bang-up job with the 1951 Miami Air Show. The show demonstrated to over 25,000 spectators that such meets can be successful and "top-notch" without benefit of military participation.

Flying his special *Great Lakes*, powered by a 200-h.p. Warner engine, RODNEY JOCELYN of Langhorne, Pa., walked away with the unofficial national aerobatic championship for the second consecutive year. MARION COLE of Kewanee, Ill., flew a 450-h.p. Stearman to a close second, making a top four position for the third year running.

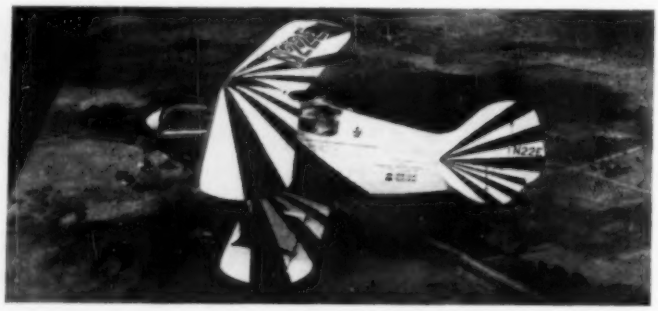
Everyone was amazed at the altitude reached by attractive CARO BAYLEY of Springfield, O. She flew a *Super Cub* up to 30,380 feet, a new world's record for lightplanes. Her first remark upon landing was, "Wow! Was it ever cold up there. 23 below!"

The most spectacular act of the entire show was a trio of three Stearmans flying aerobatics in formation with a man standing upright on the upper wing of each plane. The act was climaxed when the three ships dived in formation with the lead ship inverted. The man on the wing picked up a ribbon, stretched between two poles, approximately 15 feet above the ground. What a way to make a living!

STINKER SPEX

In response to the queries of a number of FLYING readers who are midget plane enthusiasts, here's all the pertinent dope on my plane, *Little Stinker:*

Specifications: span, 16 ft. 9 in.; length, 14 ft. 8 in.; height, 5 ft. 5 in.; Continental 90-h.p. engine with Excello fuel injection; specially-made McCauley prop with clipped tips; detachable canopy



(open cockpit for aerobatics; closed for cross-country); stressed for six negative G's and nine positive G's; fuel capacity, 21 gals.; fuel consumption, 4.8 gals. and ½ pint of oil per hour.

Performance: rate of climb, 1,500 f.p.m.; cruise, 125 m.p.h.; top speed, 170 m.p.h.; terminal velocity speed, 278 m.p.h.; absolute ceiling, 16,500 feet.

Standard cockpit equipment: flower pot; map board with mirror attached; cross-country reading material ("You Too Can Fly").

Glad to see the CAA reports an increase for 1950 in the use of small aircraft in business and agriculture. A total of 49,010 planes were used in industries other than aviation itself. Agriculture led the field with 10,500 planes owned by farmers and ranchers. So why don't you point out to the boss how conveniently and economically he could use an airplane?

HEARD IN PASSING . . .

Aerobatic pilot, WOODY EDMONDSON, preparing for take-off at a recent air show, bragged to me about his new radio compass when I kidded him about getting lost. "With that 'bird-dog' along I don't stand a chance of missing Lynchburg!" Woody promptly took off as the crowd watched. Then I heard a kid nearby exclaim, "Oh, Mama, he forgot his dog."

Betty Skelton

seems to have been of no value in a majority of cases. It was often difficult to crank, men did not know how to work the hydrogen balloon which took the aerial aloft, and it was ineffective in jungle areas. The corner reflector developed late in the war seemed effective when the search planes were equipped with radar. Parachutes actually were the most effective signal on land.

In one case in Burma the men knew they had been located by circling airplanes but could not be found by the ground crews. After two days of search, they each made a whistle of bamboo and blew the whistles for hours. Finally these led the ground rescue team to their location.

More than 60 different survival manuals were published and distributed during the war. Forty-three of the 1,000 survivals studied had survival manuals with them. They reported the information accurate and useful. No criticisms were offered of the manuals by any of the men who used them.

But however the men were equipped, it was their attitude and will to survive that was most important during their ordeals, Dr. Howard found. Morale was important. It appeared that the aircraft crew members were always better prepared for a survival experience than the passengers.

One glider party was released prematurely behind Japanese lines. The commanding officer decided that his men were not survivors but were a patrol and he operated them accordingly. They were required to shave every day and maintain a sense of schedule and order. A few of the men actually enjoyed this experience.

One American soldier captured by the Japanese was being led along a Burmese jungle trail with his hands tied behind his back. A rope attached to his bound hands was held by a Japanese guard, who considered it wonderful fun to jerk the rope periodically, causing the soldier to stumble and fall.

The soldier gradually gathered a section of rope up in his hands, jerked quickly to pull the rope from the Japanese, and escaped by rolling down a hillside and hiding in dense brush (brush was very dense in some places; one man in Burma crawled on his belly for three days because he could find no place where he was able to stand). He hid until the Japanese gave up looking for him, then got to his feet and, with his hands still tied, traveled along the stream for three days before he found a native who released his hands and guided him to safety. All this happened after he had been tortured and interrogated for days by his captors.

No one can study these cases and the many others without agreeing with one survival report which said: "No amount of survival equipment will help some men, while others through sheer ingenuity and determination and under similar circumstances will fare much better and return regardless of whether they possessed such equipment or not. It's largely a mental outlook—the will to survive is the deciding factor." END

The B-36

(Continued from page 14)

to the pilot of a long-range B-36 is the fact that in flying over the United States in bad weather he does not need to worry about alternate airports. If the weather is too severe at his intended landing field he can climb above it and fly across the continent if necessary to a place where the weather is suitable.

On Convair test flights the B-36 carries a basic operating crew of two pilots, two flight engineers, and two scanners or observers. The pilots and flight engineers, functioning as a closely knit team, are stationed very near each other in the glass-canopied forward compartment high in the nose of the airplane. The co-pilot operates the four J-47 jet engines while the two flight engineers man the six 3,500-horsepower pusher-type piston engines as well as the airplane's electrical, hydraulic, and other accessory systems. Stationed in the rear compartment near the tail, the scanners observe operation of the powerplants, landing gear, and wing flaps.

On development test flights, additional personnel include two to four flight test engineers who handle the test instrumentation, gathering data from gauges, meters, automatic recording equipment, and other measuring devices. B-36's flown by the Air Force carry much larger crews, including men trained for navigation, radar, photography, communications, bombing, and defense.

Let's make a Convair-conducted high-altitude performance test flight to see for ourselves how the B-36 operates.

The first step, of course, is for our crew to make its own pre-flight inspection of the airplane to make sure that fuel and oil supplies are at the required levels and that other related matters have been attended to.

Before crew members take their stations, the pilot already has clearly defined who is going to do what in the course of the flight.

At the pilot's command, the men give their first "on station" report.

The flight engineer, sitting at the three-section panel of instruments behind the pilot, starts the six reciprocating engines and, after proper warm-up, goes through the engine-run procedure.

One of the scanners, still on the ground outside, has been observing operation of the powerplants while maintaining communication with the pilot and flight engineer over the airplane's interphone. He has his own check list and, before coming aboard, must assure the pilot that the exterior of the plane has been given a final check and is definitely ready for flight. Safety locks and protective covers have to be removed, armament doors closed, and static ground wires disconnected. These and other duties completed, the scanner outside reports "all clear" and comes aboard.

With all crew members "on station," the pilot calls for readiness for taxi to take-off position. From the aft cabin the scanners report clearance of taxi obstructions. These men are essentially eyes and ears in completing the pilot's "dimension awareness" in the B-36.

As we taxi, the two flight engineers call off their long check lists in preparation for take-off. With this completed, the co-pilot starts the four jet engines. The jets do not require warm-up like reciprocating engines; and because of their high rate of fuel consumption they aren't started until the B-36 is on its way to the take-off point.

Now, with all 10 engines idling, the total thrust is so great that the inboard and center reciprocating engine propellers are put into reverse pitch to prevent excessive use of brakes while the B-36 taxies to the end of the runway.

Using the steerable nose wheel, the pilot swings the B-36 to a stop in take-off position. He adjusts the trim tabs, restores all propellers to normal pitch, and unlocks the flight controls. The flight controls, by the way, are kept locked when not in use to prevent possible damage by sudden gusts of wind. They are readily locked or unlocked by the flick of an electric switch, with hydraulic snubbing action doing the work.

The plane is restrained with the brakes until take-off power is set on all engines. Cooling of the piston engines is not critical at this take-off starting point, as it is in many other planes, because the B-36 employs fan-type forced cooling which assures adequate air flow around the engines even while at a standstill.

Now the brakes are released and the plane surges forward. Steering is done with the nose wheel control until moderate speed is attained; then the pilot resorts to the highly effective rudder. Soon the pilot exerts back pressure on the control column and lifts the nose wheel from the runway. To occupants of the nose compartment, the plane seems airborne at this point but it is not. It has merely assumed a nose-high attitude, with the pilot cabin about four stories up in the air as the plane nears take-off speed.

In another moment, the main landing gear leaves the runway and we're airborne. The pilot now employs indicated airspeed as a means of airplane attitude control. At the pilot's command, the co-pilot, by manipulation of switches, retracts the landing gear and wing flaps. Take-off performance, we observe, is excellent despite heavy take-off weight.

In previous big bombers, take-off at full load has usually produced quite a bit of anxiety in regard to possible engine failure. With the tremendous reserve power of the B-36, however, the loss of an engine's power on a heavy take-off is of little consequence.

After take-off is completed and the B-36 has gained several thousand feet of altitude, the output of all engines is reduced to "maximum continuous" for the protracted climb to high altitude. From this point on, operating the B-36 is largely a matter of checking, adjusting, and readjusting the power settings as required, the co-pilot attending to the jets and the flight engineer to the reciprocating engines. The second flight engineer, meanwhile, is kept busy with the many controls of the electrical power supply system which puts 160,000 watts of elec-

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trical energy at his fingertips. The pilot gives his attention to directing the aircraft's flight path while maintaining steady climbing speed and relaying data to the test engineers.

One of the most impressive things a pilot discovers in flying the B-36 is that despite manually powered control surfaces almost as large as the entire wing of a B-24 *(Liberator)*, the airplane handles with ease. Spring tabs mounted integral with the trailing edges of the control surfaces move them by aerodynamic forces without need of power boost. The pilot supplies only the force required to deflect the tabs.

The B-36's control characteristics in normal flight are conventional. Very little pilot effort is required. In maneuvering flight, however, the pilot readjusts elevator trim tabs quite often to minimize longitudinal control forces.

When the B-36 is in steady flight, the tons of fuel and powerplants distributed across the 230-foot wingspan tend to stabilize the craft against the effects of turbulence. By the same token, the pilot learns that in restoring the aircraft to steady flight following an upset due to turbulence, he must anticipate a lag of response to control application. In lateral control the B-36 at first appears slow. Angular rolling velocity is only a few degrees per second, but the wing-tip linear rolling velocity equals that of small military aircraft. It merely has a greater distance to travel.

Because of the "mass inertia" possessed by the B-36, the pilot must learn to avoid overshooting his flight control actions. He must anticipate the inertia effects of the plane's enormous mass. There are more than five tons of jet engines alone under the wing tips!

The Air Force has disclosed that the B-36D has a maximum speed greater than 435 m.p.h. and a service ceiling over 45,000 feet. Such performance with a plane which is equivalent in mass to half a dozen railroad boxcars, comprising a maximum gross weight of approximately 358,000 pounds, provides an impressive example of mass in motion.

As the plane climbs into an overcast, thermal anti-icers providing wing, tail surface, and propeller heat are turned on. The pilot manipulates the flight controls as required in correcting for the cloud turbulence.

Above 8,000 feet, the forward and aft cabins are pressurized. As climb continues toward the stratosphere the flight engineer increases the cooling fan speeds in order to augment engine cooling.

Soon the pilot levels the B-36 off and directs the co-pilot and flight engineer to establish the high power setting of the first test run. Then he turns the airplane over to the automatic pilot so that he can give closer attention to details of the power runs. At high altitude the scanners call your attention to the intense blue-black hue of the clear sky above.

As the test run progresses, the B-36 penetrates the thin atmosphere at full speed, propelled by maximum thrust of all engines. Sudden atmospheric gusts flex the structure from time to time as we pass through areas of turbulence.

The B-36 has brought something new to aviation—routine flights lasting 36 hours, with much of the time spent above 40,000 feet. That's about twice as long as crew members spent on maximum-range bombing missions during World War II. These B-36 flights—extra long both in range and hours—have posed an unprecedented crew-fatigue problem. Carrying four relief crew members and six bunks in each B-36 has alleviated the problem but has not solved it.

Consequently, current models of the B-36 are being equipped with several of the comforts of home in order to put Air Force crews over their targets in tiptop physical and mental condition. Among new equipment is a good-sized galley complete with two electric burners, an icebox, and storage and working space. Crew members will eat from lightweight retractable tables and folding chairs rather than on a catch-as-catch-can basis. Two new bunks are being installed in the forward cabin to supplement the six bunks in the aft cabin, and each bunk will have a mattress, pillow, and blanket. Two lavatories, one forward and one aft, will have complete toilet facilities. Provisions for stowing kit bags and other personal equipment will be found throughout the airplane.

☆ FLAT SPINS ☆

You can hardly blame Arvid Morris Smith if he's lost faith in his fellow man. Arriving at the Yorba Linda, Calif., airport, he found thieves had stripped his plane of the propeller, tail wheel, tires, radio, microphone, compass, a window pane—and even his sunglasses.

When letters sent by air from Paris arrived in Copenhagen smelling of exotic perfume, the postmaster explained for the benefit of suspicious wives that a bottle of French scent had broken in the mailbag.

Three private pilots of Sydney, Australia, had their licenses suspended for flying slowly at tree-top level. The complaints came from a nudist camp.

Actor Richard Widmark was returning to Hollywood after making a picture in England. When the plane on which he was a passenger ran into rough weather, the hostess brought him a note from the pilot which read: "I saw you flying that plane through the storm in *Slattery's Hurricane*. What would you do if you were in my place?"

Didja know? A pilot 10,000 feet in the air can see the sunrise 10 minutes before it is seen on the ground below him.

An F-84 (Thunderjet) roared over New York City recently at 500 m.p.h.—with an unconscious pilot at the controls. Lieut. Charles R. Hearn, Jr., senseless for 12 minutes after the plane's canopy burst at 30,000 feet, regained consciousness at 7,000 feet—within sight of the Empire State Building. He landed at Idlewild with only three minutes' fuel left.

Motto of the Iowa Aeronautical Commission: "Time Flies—Why Don't You?"

—Harold Helfer

Once all scheduled power runs are completed, the pilot disengages the automatic pilot in preparation for descent. The co-pilot shuts off the jet engines, if they have been re-employed, and the flight engineer shuts down the outboard reciprocating engines and feathers their propellers. Near the end of the flight, reduced weight makes less power necessary.

A rapid descent is in order. The plane doesn't come drifting down—the pilot plummets the B-36 earthward at limit dive speed. He knows, however, that if fuel were short the plane could go a great distance by gliding at moderate speed.

As the craft dives below 10,000 feet, both cabins are depressurized. The pilot reduces airspeed by leveling off momentarily. Soon the landing gear is extended. One of the scanners comes forward from the rear compartment to climb out into the wing and check the main landing gear down-locks for positive latching. The second flight engineer checks the nose wheel landing gear, peering through a hatch in the floor of the forward compartment radio deck.

The big plane, with only center and inboard piston engines utilized, banks into the landing approach pattern at slow speed. With its lightened weight and with wing flaps half extended, it seems to be floating along. Wing flaps are extended all the way on final approach. Operating speed of the four engines is increased in anticipation of a possible wave-off from the control tower. At this point, assuming good weather, the pilot is controlling the flight path visually but is employing his flight instruments as reference. The plane enters the landing flare at what seems, to a new pilot, a very great height.

At touchdown of the main landing gear wheels, the B-36 is allowed to pitch smoothly forward to the nose wheels, and the pilot calls for reversal of the four operating propellers. As he advances the throttles, the flight engineer sets the predetermined power setting in reverse pitch. Now the pilot locks the controls and steers the plane to a stop with combined nose wheel steering and brake action. At the end of the landing roll, the flight engineer shuts off the two center engines and, with propellers returned to normal pitch, uses only the two inboard engines for taxiing to the hangar yard.

Back on the hangar ramp the inboard engines and all accessory equipment are shut off and the airplane is secured.

You and the crew climb down from the B-36 and file into the office for a post-flight briefing. A detailed report of the flight is to be written up, and specialists will analyze the data obtained.

You now know something about big and easy flying, having gone along on a performance-evaluation test in a B-36. You also realize that this flight was just another small step in the continuing development of the Air Force's longest-ranging, highest-flying bomber—the big stick with an atomic punch. END

Check Your Plane

(*Continued from page* 33)

avoid extensive and expensive repair jobs by catching minor troubles in time. Indirectly, by adding to the safety of private flying, you may help bring down high insurance costs.

Before you begin such an inspection, plan it. A logical way is to begin at the propeller, work around to the right side of the cowling, then around the wing and along the fuselage to the tail. Then complete the circuit. As you pass each landing wheel stop to examine it and its struts. Next comes a cabin check of lights, instruments and radio. Finish up with an engine test. Follow the same plan every time. It's a good idea to write out a list of operations. Then, as each one is inspected, check it off. Printed inspection forms for this purpose can be obtained from aircraft insurance companies.

It's important to have the right equipment. You will need a flashlight to search into the dark spots. Also you'll find good use for a clean rag, a screwdriver, pliers and diagonals, and a piece of safety wire.

Another thing. If you spot trouble, talk it over with a mechanic.

Here are some things to look for. Let's begin in front:

PROPELLER: The propeller should be solidly mounted on the hub. Watch for cracks, missing cotter-pins and evidence of looseness in the hub. Look carefully, too, for cracks or scars in the blade. There should be no nicks in the leading edge of a metal propeller, since these tend to localize the stresses and may lead to blade failure. Look for evidence of warping, glue failure, separated laminations in wooden props. Check the propeller locking device.

A pilot I know once had to make a forced landing when the engine threatened to jump out of its mounts. On examination he found that one tip of the prop of his Aeronca *Chief* was missing. The ingenious pilot broke off the remaining prop tip, making both blades equal, and flew the plane safely home. Later he reported that the engine worked better than ever and was only a little rough. I have heard the same story told about the wing tips of a DC-3, but I didn't see that one myself.

COWLING: While removing the cowling to examine the engine, inspect the fastenings. If they are badly worn they must be replaced. A crack in the cowling should be noted and repaired. The sooner you do this the less of a job you will have, since such cracks tend to enlarge quickly.

ENGINE: Inspect the spark-plug connections. Terminals may be rusted. When a plane is flown much, oil and dirt can collect on the terminals causing faulty ignition. If the plugs show any of these signs, have them loosened and cleaned. All insulation should be inspected thoroughly for deterioration.

Next, check the fuel in the tank with a piece of wire. Then drain the gascolator which is a trap in the fuel line designed to collect any foreign matter. On some new model planes it is only necessary to turn a petcock until a little gas flows out, carrying water and sediment with it. On other planes it is necessary to remove the cowling and the entire gascolator bowl. This should be done daily, since water from condensation can form in a partly filled gas-tank overnight. Examine the rest of the fuel line carefully, watching for breaks or wear due to vibration. It is a good idea to turn on the fuel and inspect the line for leaks.

Check the oil with the dipstick. When you replace the stick make sure it is on tightly. Go over the oil line as you did the fuel line. The oil tank should be securely mounted and have no leaks.

Inspect the manifolds. Make sure the cabin heater isn't cracked, since this might allow poisonous carbon monoxide gas to enter the cabin.

WINGS: A good way to test for cracked structural members is to grasp the wing tip and give it a quick shake. If you hear a rattle inside, or if the wing fabric buckles in some spot, chances are you have a broken spar, or broken drag or anti-drag wires. You can spot loose or broken rib stitching easily by looking for fabric that has drawn away from the ribs. Examine the wing tips. They can easily be damaged, especially when the airplane has been stored in a crowded hangar.

Look over the fabric carefully. It should be taut and without tears. All surfaces should be smooth and undented. Look to make sure the drain holes on the under side of the wings are open. Sometimes they may be doped up and sometimes they become plugged with dirt.

Next, inspect the struts. They should not be bent. The strut fittings should be inspected for defects, which will usually be indicated by a crack in the paint covering the fitting. The main struts join the fuselage at a point called the "cluster." This is the point where the main fuselage members are joined by a weld. Since this spot takes quite a beating, it should be looked over closely.

Control fittings on the ailerons—hinge pins, hinges—should be examined. Look over the flaps, too. You will test both

* FLYING TIP *

HERE'S a good way to check on carburetor icing when you don't want to lose power by having carburetor heat on all the time. Pull on the carburetor heat for a few minutes. If the engine speeds up, close the heat. Then, if the engine continues to speed up after the heat is turned off, you can be quite certain that the carburetor has some ice.

If you pull the heat on and the engine slows up, but speeds up again once the heat is turned off, chances are the carburetor has no ice.

Another way to tell is by checking the tachometer every so often. If it shows a loss of r.p.m. from the original setting, there possibly is ice.

—*Bill Singer*

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Flying Farmers, U.S.A.

OUT IN THE OPEN

Northwest Airlines' opposition to private flying, mentioned in last month's column, has come out in the open. It reveals itself as a vicious campaign that could set aviation back 10 years in a state where progress has generally been the rule.

I have been reliably informed that, at a recent hearing, Northwest representatives said that the trend is to abolish state aeronautical departments; that private flying is on the down-grade and, therefore, state funds should not go to small airports; and that the functions of state aeronautical bodies could well be handled by the Federal Government.

I am also informed that the same representatives testified before Minnesota's Little Hoover Commission that there is no need for a Department of Aeronautics in the Gopher State.

Flying Farmers believe that their campaign for a gas tax, which would be used to build one-way strips, is the reason for Northwest's opposition. It is hard to see why this airline is so excited. Under the present schedule, Flying Farmers in Minnesota pay an aviation fuel tax of four cents per gallon, while the airlines pay only .06 of a cent per gallon.

Northwest should be glad that Flying Farmers are willing to help pay for aeronautical developments instead of standing in line at the subsidy counter.

★ ★ ★

FLYING FARMER CONVENTION

Flying Farmers will have a chance to try a different type of traffic pattern when they swing their partners to "Turkey in the Straw" and other popular hoe-down numbers at their National Convention, scheduled for August 25-29 at Fort Worth, Tex.

Entertainment features at this annual business session will include a rodeo, barbecue, and square dance contests.

★ ★ ★

LIGHTPLANE ICE REMOVER

When ground travel was reduced to a crawl recently on icy Ohio highways, a lightplane equipped with an aerial applicator was wheeled out, and its hoppers filled with crystallized salt. Flying just high enough to avoid high-tension wires, the pilot scattered 200 pounds of salt per mile on a slippery section of the highway. In a short time the pavement was completely free of ice.

Use of the lightplane for this purpose was first suggested by Harry Jordan of Skypilots Flying Service, Inc., Columbus, O. Spraying supersaturated brine solutions is another possibility, says Ralph Young, Agricultural Aviation Coordinator for the Ohio Aviation Board.

★ ★ ★

FLYING FARMER IN BOLIVIA

I have long believed that the airplane will eventually find a place in the agriculture of most of the world. For that reason, I am particularly happy to do some research for Rex Youngquist, an airline pilot for Panagra.

Writing from Lima, Peru, Youngquist tells me about a farm he owns in Santa Cruz, Bolivia. "It has," he writes, "60,000 acres of timber on it; very little of which is suitable for logging." Youngquist would like to kill all this growth at the end of the rainy season, then burn it down to the ground during the dry season.

I am sending him all available information on chemical brush and weed killers, but would like nothing better than to pass along to him the experiences of FLYING readers who have used lightplanes to spray large brush areas. Youngquist would also like information on seeding grass from the air.

Youngquist believes that the lightplane can play an important role in South America's agriculture. "If you could see this country," he writes, "I think you would agree that the airplane is the one machine that can open up a large part of it."

I would like to hear from anyone in Mexico, South America, or Canada who is interested in the use of the airplane in agriculture. There must be flying farmers among our neighbors even though they may not be organized. Perhaps Flying Farmers can become an international organization.

★ ★ ★

FLYING ZOO

Joe Halsmer, one of the three flying Halsmers of Lafayette, Ind., has flown all over the world several times. But he never before hauled a cargo like the one he recently brought from Bangkok, Siam, in a Seaboard and Western DC-4. The cargo consisted of five elephants, 116 monkeys, six cats and one 22-foot python.

The elephants were the most devilish and liked to turn the lights on and off. Finally disgusted with their antics, Halsmer stopped at Shannon, Ireland, and lined their quarters with barbed wire. But the elephants put up such a fuss he had to remove it.

One elephant broke loose twice during the flight, but by the time that happened, Halsmer had learned a sure cure for any unruliness. He simply climbed to 13,000 feet and all his charges promptly went to sleep.

ailerons and flaps controls later in the cabin examination.

FUSELAGE: Tap your finger on the fabric to test it for resilience. If it shows signs of excessive wear or tears, repairs will have to be made. Make sure the fabric is clean and oil-free. Oil-soaked fabric is a fire hazard. Look over the fuselage surface for dents, breaks or any sign which might mean a broken structural member.

TAIL GROUP: Check all fittings on the assembly. Look through the control slot for corrosion or wear. Watch out for rust. Tail wheels merit a careful examination. A weak or broken wheel spring can mean a damaged rudder on a hard landing. Bearings on the tail wheel may wear out quickly, since the wheel is so small that it is apt to be half-covered with sand or dirt.

LANDING GEAR: Tires should be examined for wear and proper inflation. Look over the struts. Shock struts should both be of the same length. If they are not, they need servicing before they will function properly.

CABIN AND COCKPIT: Be sure you look over the door fastenings and the windows. Old plastic windshields are dangerous. They are often difficult to see out of, and if too weakened they may blow out.

The gasoline valves should be inspected for leakage in both the "on" and off" positions. There is a dye in gasoline, so any leak will be revealed by a stain. The controls should open and close the valves all the way.

Work all the controls through their full range. They should move freely and easily, without binding. Search the control cables for frayed wire or broken strands. Wipe off any grease that might be on the cables, as grease will hold abrasive sand that speeds wear.

Are the instruments in proper order? While you are at it, it is a good idea to look over such things as seat belts, seats, fire extinguisher, and the like.

ELECTRICAL SYSTEM: The battery should be securely mounted. Check it at least once a week also for water level and specific gravity. The connections must not be corroded and must be tight. Try the lights and the radio. The radio should also be inspected for secure mounting.

ENGINE TEST: You are almost ready to fly. All that remains is the engine test. Check all engine controls. Warm up the engine slowly. Test the switch, the mixture control and the heaters. Note the oil pressure. When the engine is warmed up sufficiently and there is proper oil pressure, try out the mags, noting the tachometer readings. Again check your engine instruments for proper values.

And you are ready to take-off, to fly safely, and to *land* safely. It doesn't take as long as it sounds, either. In fact, it takes longer to read this article than to completely examine the airplane. Once you have learned the job, you will do it even more quickly. Twenty minutes should be enough if you find everything okay.

What's 20 minutes to a lifetime? END

Merry-Go-Round

(Continued from page 29)

an obstacle at a high rate of speed in such a manner that it seemed impossible to miss it—but of course the cable always made it impossible that we hit it.

After the airplane leaves the ground and climbs to an elevation of about 100 feet or 30° angle of bank, all sense of discomfort from the circular motion is lost. The acceleration toward the center is only about one-fourth G and this is not enough to notice. The revolution rate is not high enough to cause dizziness—our circle with its 250-foot radius was about 1,570 feet in circumference.

The plane can be released up-wind, down-wind or cross-wind. There is no difficulty in releasing it to continue in any desired direction.

We noticed a few characteristic traits in our experiments. The release mechanism produced a noticeable drag on the left wing when the plane was flying free of the cable. The drag was easily compensated by a little right rudder pressure. Just at release from the cable the nose of the plane rises sharply. This is caused by the sudden freedom from the extra loading due to the pull of the cable and to the circular motion.

Earlier Tommy and Richard had tried flying the airplane without the cable in a circle of 250-foot radius and discovered that they needed an angle of bank of 70°.

Next we experimented to see if the plane could take off in a circular motion without the wire, depending only on the landing gear, nose wheel and rudder to hold it in the 250-foot radius circle. With Tommy as pilot the plane took off, but just as it left the ground the left wing dipped to within one foot of the ground. This ended our experiments the first day.

On the following morning we resumed our experiments, intending to make comparative measurements with conventional take-offs.

It was planned to fly at the maximum speed at an elevation of 100 feet while attached to the cable; read the accelerometer to determine the wing loading; release when going into the wind and climb as high as possible before passing a row of trees near the field.

On the first test the maximum speed reached at 110 feet altitude was 65 m.p.h. and the accelerometer showed two G units. The plane was released and continued to climb at the speed of maximum rate of climb. It achieved an elevation of 300 feet as it passed the trees.

The experiment was repeated, maximum speed was again 65 m.p.h., and number of G units at 120 feet altitude was 2.2. The plane was released at 120 feet and again reached an altitude of 300 feet as it passed the row of trees.

Next, the airplane was made to take off in a straight line toward the same row of trees, starting from rest at a position corresponding to the point on the circumference of the circle at the greatest distance from the trees. The craft reached an altitude of 120 feet as it crossed the row of trees.

These experiments showed that the method of circular take-off with a 250-foot cable provides an additional 180 feet of clearance over that obtainable with a straight take-off. This would always be true under similar conditions.

We then tried a circular take-off without the wire. There was again the dip of the left wing, and the airplane took off into the wind toward the row of trees and crossed them at an elevation of 110 feet. This shows that circular take-off without a cable, besides subjecting the landing gear to a severe load, has no advantage over a straight take-off.

At this point in our experiments, Jean A. Roché, and a Mr. Keiffer, an Air Force engineer, arrived.

Mr. Roché is the first man, as far as I know, who ever successfully demonstrated a Merry-Go-Round take-off. Roché's demonstration was conducted in 1938 with an Aeronca fitted with a parachute release mechanism attached to the tip of the left wing. He used a 400-foot length of control line cable extending from the release mechanism to a stake driven into the ground in the middle of Wright Field, Dayton, O. Release was made at elevations from 20 to 40 feet, usually after about two-thirds of one turn.

The fitting which connected the cable to the wing was a quick release hook to which anti-spin parachutes are attached when spin demonstrations are made. A cable led to the cockpit so that the pilot could cut loose at will.

This mechanism had been loaned by Mr. Roché for our experiments and it was attached to the left wing of our *Ercoupe* at the position of the left wing tie-down ring. A small hole was cut in the fabric and a hole drilled through the main I beam to permit bolting the release mechanism firmly to the beam. A small cable from the mechanism passed through a bent tube through the floor of the cabin to a metal triangle ring which was pulled to release the airplane from the cable.

The cable itself was standard control line cable one-eighth inch in diameter. At the plane end it was attached to a ring which fitted into the jaws of the release mechanism. At the other end it was attached to a ball-bearing wheel hub which in turn was fastened firmly to a four-foot length of three-inch diameter steel pipe. The pipe was set into a hole in the field and surrounded by about one foot of concrete to provide a firm anchorage.

After Mr. Roché's arrival, we continued our experiments. We made a third test of clearance from circular take-off, releasing at 75 feet. The maximum speed before release was 51 m.p.h. and the accelerometer read 1.7 G units. After release the airplane cleared the trees at an elevation of 270 feet—or 150 feet higher than that obtained by straight take-off.

Tommy experimented again with landing the plane while attached to the wire. He reported that from an angle of 45° down to about 30° he observed the pitching effect caused by the tendency of the outer wing to stall out. From 30° down, however, the only major difference

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from a normal landing was the uncomfortable centripetal acceleration.

Wind velocity during these experiments was steady at 15 m.p.h. The cable slacked a little when the plane was on the upwind arc of the circle.

In the afternoon we resumed taxiing tests with two persons aboard. There was a tendency for the nose of the plane to be drawn in toward the center of the circle on taxiing, which had to be counteracted by turning the nosewheel out and by using rudder. This tendency was due partly to the drag of the cable on the grass and partly to the fact that the cable was attached to the wing ahead of the center of gravity of the plane.

Next we planned to demonstrate landing from a higher elevation with one person aboard. Tommy was asked to fly the plane at as high an elevation as he desired and then bring the plane to a normal power-off landing. The plane took off, gained altitude, and climbed to an elevation of more than 175 feet. Suddenly the cable snapped and the plane flew off along the tangent as it would for an ordinary release.

When he landed, Tommy reported that apparently the outside wing stalled out and the wing fell to about level position before the cable became taut and snapped. After the snapping of the cable there was a big side skid. Apparently the craft started to stall and go over the top but was prevented from continuing the stall by the force of the cable. The sudden strain, however, broke the cable and also put enough force on the post in the center of the field to crack the concrete. The force necessary to break a section of the cable was later determined to be slightly over 2,100 pounds by Prof. Paul G. Fluck of the Mechanics Department, University of Wisconsin.

We did not continue the experiments, since nearly all the measurements we had planned had been completed by this time. Nevertheless, as a result of these and Roché's experiments, we arrived at a number of conclusions:

- Circular take-off is feasible.
- Circular take-off provides considerable additional clearance over straight take-off.
- It provides an infinitely long runway for take-off. This is especially useful in case of an engine failure—though Tommy reported that he would not have been pleased to make a dead engine landing while attached to a 250-foot cable.
- A radius of 250 feet is less than the minimum advisable for safety. Any smaller radius would also give too much discomfort to pilot and passengers.
- A number of elaborate devices have been patented in the past for circular take-off.* The most probable reason none of them were put into use is that they all proposed the use of a radius much less than 250 feet.
- A larger radius would eliminate most if not all of the hazard and discomfort and provide additional advantages. In Mr. Roché's experiments with a slower plane, a 400-foot cable provided take-off with no discomfort to the pilot. A 400-foot cable would permit increased elevations and speeds and give additional clearance over that for the 250-foot cable.
- The partial stall responsible for the breaking of the cable can be associated with the excess loading from too high an angle of bank and too small radius of curvature. The outside wing stalled in spite of the fact that its speed was greater than the speed of the inside wing. This is to be expected, since the cable adds lift to the inside but not to the outside wing.
- The jerking motions observed by Tommy and Robert Sanders were probably due to stalls of the outside wing. When the wing stalled, the wing dropped until the left cable attachment point was above the line from the post to the center of gravity. The cable then pulled down on the left wing, thus raising the right wing and taking it out of the stall.
- Possibly the use of nylon rope would be an advantage because its elasticity would prevent force from being applied so abruptly. On the other hand it might permit out and in oscillations to develop.

* * *

Nearly all the difficulties we met would be eliminated by the use of a longer cable. With a 400-foot cable and plane flying 70 m.p.h. at an angle of bank of 30° and elevation 200 feet, the tension in the cable is 0.4 W and the wing loading force 1.3 W. The normal angle of bank for no tension except due to drag in the cable is 45°. Drag of the cable could be greatly reduced by a streamlined covering and a maximum speed greater than 70 m.p.h. could be obtained.

The infinitely long runway should permit planes to take off safely with larger than normal loads.

Merry-go-round take-offs can be especially useful in training pilots. A student pilot can learn elevator control separate from rudder and aileron control. It will be possible to make many more take-offs and landings in a given time than with the conventional procedure. It would provide a greater percentage of practice flying time flying close to the ground. Practice in circular flying is possible in weather which is not suitable for free flying.

All these seem extremely important advantages for flight schools. Many an operator who is moaning because the percentage of bad weather is too great could make almost every otherwise non-flyable day show results.

Even though the total area of land needed for circular take-off may equal the area of one landing strip, it is still considerably less than the area occupied by an airport which has more than one strip. If a post eight to 10 feet high were used, the space inside the circle could even be used to grow crops. A tree in the middle of a 40-acre field could serve as the post for circular take-off.

There is still another advantage—flying while attached to a cable makes possible the testing of new designs of planes without lifting them over a few feet from the ground. Many flying characteristics could be determined under conditions of no danger to the pilot.

Cable take-off would not be practical for planes with a high wing loading requiring high take-off speeds because the radius necessary to keep centripetal acceleration below the value for discomfort increases with the square of the take-off velocity. For instance, if 400 feet is deemed satisfactory for a 50-m.p.h. take-off, 1,600 feet would be needed for 100-m.p.h. take-off and 3,600 feet for a 150-m.p.h. take-off. Such long cables are impractical.

For planes with high take-off speeds, a circular runway of the required radius should be built and a circular track like a railroad track constructed parallel to the runway about 600 feet toward the center. The plane could be attached by means of a 600-foot cable to a car which runs on the track. Much, and perhaps all, of the energy needed for take-off could be supplied by the car towing the plane through the cable. For jet planes this might save several hundred pounds of fuel. After the plane was flying at an elevation of about 300 feet it could cut loose from the cable and car and be clear of all neighboring obstacles.

Circular take-off is bound to cause a good many arguments among pilots. Yet the evidence presented here makes it obvious that it has great advantages under specialized circumstances. The availability of an infinitely long runway, plus more than 300 feet of extra clearance, cannot help but mean added safety for pilots who choose to use it. END

RAT TRAP

SHOP FOREMAN Jim Bailey (above) of the Pacific Airmotive Corporation, Burbank, Calif., has devised what he thinks is the only flying rat trap in the world. He developed the gadget while cleaning out a rat-infested AT-11 owned by pilot-rancher John Broome of Oxnard, Calif.

The trap, which covers the landing gear wells while the plane is parked, prevents rats from scampering into the fuselage and gnawing at Broome's pride and joy. The trap is removed before flight.

—DON DWIGGINS

* Pennington—893,647—July, 1908
Bond—1,033,148—July, 1912
Holland—1,802,254—April, 1931
Steiber—1,925,212—Sept., 1933
Rubisson—2,286,381—June, 1942

Fairchild Pack Plane

(*Continued from page 25*)

A good example is GCA equipment—a prime necessity for a successful airhead. At last spring's Exercise Swarmer, flying GCA equipment into the airhead had to be simulated. It was hauled in on trucks because the Air Force just didn't have the necessary planes to fly it in tactically. "Why not," ask the experts, "pre-build your GCA rig into a pod, fly it in, crank up your aerial, and you're in business?" The same principle could be applied to field hospitals, machine shops, aircraft maintenance setups—even whole command posts.

To haul expendable items like rations, shoes, or ammunition, the pods could be made expendable, too—maybe out of plywood, fabric, or even plastic. Then you wouldn't have to worry about making the return trip with them. Or, possibly, as bigger and better Pack Planes come along, the type of equipment hauled need not be limited to what would fit into a pod. It might be lashed into place beneath the flight deck and covered with cloth or plastic fairing to cut down drag. In this way, trucks, guns, maybe even tanks, could be hauled by air. The only limitation would be the center of gravity and the load limit of the airplane.

The successful completion of the *Pack Plane* marks a big forward step toward our announced goal of making the Army completely air transportable. For with the pod, airborne armies as we have known them may well become obsolete. Pods full of men will be dropped, rather than individual parachutists. The latter will still have their place, to make the initial seizure of the airhead. But special jump training and top-notch physiques will no longer be a prerequisite of the air-transported soldier. A selectee with an M-1 rifle can climb into a pod just as easily as he can into a 2½-ton truck.

Here are some more things you could do with a pod: Build them like landing craft, to be dropped in the sea to sneak ashore during an amphibious landing. Pods could be used as droppable shelters for Arctic rescue work, each equipped with food, clothing, heat and medical supplies. They could be automatic radar stations, to be dropped in otherwise inaccessible areas. Once you accept the principle of the detachable fuselage, the possibilities are endless.

In flight, the XC-120 looks like a conventional C-119 with a C-82 tail. It is powered by two Pratt & Whitney R-4360 engines, developing 3,250 h.p. each and turning 181-inch Hamilton Standard propellers. It carries 2,798 gallons of fuel. Maximum speed at 18,000 feet is 245 m.p.h., rate of climb 1,100 f.p.m. The gross weight is 64,000 pounds. The pod has a 2,700 cubic foot capacity and can carry 36 litter patients, 64 foot troops, or 20,000 lbs. of cargo.

The pod, when detached from the mother ship, rolls on four removable dual wheel units. The forward pair are fully swivelled for easy steering. The wheels can be reversed, with the swivelled pair mounted on the rear if you want to tow the pod in that direction. A standard AF towing bar is used. When the pod is attached for flight the wheels are removed and carried inside.

Biggest design problem in building the XC-120 was the stork-like quadricycle landing gear. The Army and Air Force specified a cargo compartment that could be towed into place either from the front or rear of the mother ship. Also specified were clamshell doors built into either end. This ruled out a nose wheel and the conventional tricycle gear used on Fairchild's C-119 and C-82.

Fairchild's French-born chief designer, Armand Thieblot, solved the problem with long outrigger wheels under the engines. These, together with the main wheels, tuck up into the nacelles during flight. There was considerable apprehension about how the spidery auxiliary legs would withstand heavy landing and braking shocks. It looked as though the services might, by insisting on this capability, be losing more than they gained. In preliminary taxi tests of the XC-120 the new gear appeared to be working better than anyone had guessed. It makes for a soft landing, according to chief test pilot R. A. Henson of Fairchild.

One way to get around the quadricycle gear problem would be by way of a major modification of the C-119 and there is strong sentiment within the Air Force for just such a move. The cargo section of the C-119 would be cut away just aft of the nose and a pod substituted. This would mean that the pod could be attached or loaded only from the rear. But the fact that many more parts of an already-existing airplane could be utilized would be a compelling factor if we decided we needed large numbers of Pack Planes in a hurry.

Pod proponents also see an extension of the principle to the helicopter field. The Piasecki Helicopter Corporation is building an experimental pod-carrying job, the XH-16. It and its descendants are expected to play the same role in respect to the Pack Plane that landing craft did to cargo ships during the war. By combining the Pack Plane with the helicopter, the pod enthusiasts come up with an aerial merchant marine that could well revolutionize our whole concept of military logistics.

That the Pack Plane is not exclusively a Fairchild baby is evidenced by the entrance of Lockheed into the field. For some time it has used a small commercial pod, called the *Speed-pak*, to enlarge the cargo-carrying capacity of its *Constellations*. Now it has redesigned and enlarged the *Speed-pak* with possible military markets in view. The new version is 33 ft. 4 in. long, 7 ft. 4 in. wide, and 6 ft. 3 in. high. Lockheed has told the military it could be used as a GCA unit, a control tower, a communications center, weather station, first aid station, or field command post. Another Lockheed proposal would extend the pod principle to the Navy's huge R-60 *Constitution*.

Commercial airlines, too, have evinced interest in the Pack Plane principle. Here the truck-trailer analogy holds true and the ramifications are almost limitless. Refrigerated pods could be used to carry perishable cargo like fruit or flowers. Pods could be made interchangeable so that the same cargo compartment could be hauled by plane, truck, or railroad.

Pullman pods could be devised so that passengers who arrive at their destination before sun-up could sleep undisturbed as late as they like. And so on. Pay your money and take your choice.

Of course, these applications are some years away. Dozens of bugs will have to be ironed out. It is still much too early to assess the impact of the Pack Plane upon aviation. But the indications are that it will be considerable. END

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Southwest of Moab

(*Continued from page* 17)

Kent Wilson from Rifle, Colo. He pointed below, to where the gushing Green River joined the Colorado in a and then he swung his southerly course. That point. Somewhere about of us, couched among red spires, was the hidden val

I had a peculiar feelin and anticipation—partly b rain was so rugged but ma the excitement of discove

Few white men had s desert below in all history ber who had landed pla be counted on your finge

A compass course was the area where there w lines, roads or towns. W his Kollsman to the gene the valley, then we bega ever-widening circles. W dreds of square miles in utes. Suddenly I saw downward, dragging a vall by red and cream cliffs.

Faintly traceable in th was a 20-foot wide irregu ran lengthwise along the v 400 yards. As we made our canyon, we could s houses in the high sandston juniper growths covered t

On final approach it wa glide directly over a larg hillock. I wondered what 600 years ago would have seen the "great silver bird" their front lawn. The p shook, and lurched to a sto far edge of the tangled s timeter showed 6,468 feet.

A few moments later, *Sedan* powered in for a rela landing on the rough grou

Our party was safely heart of America's last gre

We looked around. Rum wild cattle roamed in the tion—lean old longhorns w spread who ran like antelo approach of man. And w about the ancient cliff dwell land Indian houses built of stone years before America was discovered. Indian history authorities say that a devastating 20-year drought caused the tribes in the vast Mesa Verde area to leave the homes in which they had lived for generations have been up there?" I asked K

"I'd guess anywhere from 600 to 1,000 years," he said.

The timbers were weathered but they were still stout and whole. The country is arid and probably the atmos

BOOK B

TIGHT

The following list shows the gathered. Where a single page to bottom:

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63—RICHARD L. WOOD

land ruins we want to explore. One plane will always fly cover for the other.

We'll undoubtedly find new landing strips in this last great American frontier and may even walk where white men have never walked before. END

The Menace

(*Continued from page 19*)

is a common sight. But you don't find DOSAV ("All-Union Society of Voluntary Assistance to Aviation") is working on a scale far exceeding anything along the same line in the world. It is quite possible, said General Hilton, that the

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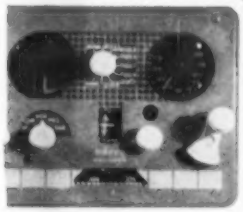

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...mounted behind the pilot compartment. The scoops could be intakes for oil coolers. The radiators or grills on the side cowling would be for the extension drive shaft and any guns mounted forward of the cockpit. The hump on the underside of the nose could be a nose-wheel for ...ing gear with the engine located behind the pilot. Two of the engineers reacted immediately to this sketch by saying it looked more like a P-40 gear mount.

"On the other hand, Russia received so many P-39's from the U.S. on lend lease during the war that it doesn't seem likely

Southwest of Moab

(Continued from page 17)

Kent Wilson from Rifle, Colo. He pointed below, to where the gushing Green River joined the Colorado in a prominent Y, and then he swung his Cessna 140 to a southerly course. That was our check point. Somewhere about 10 miles ahead of us, couched among red walls and high spires, was the hidden valley.

I had a peculiar feeling of exultation and anticipation—partly because the terrain was so rugged but mainly because of the excitement of discovery.

Few white men had set foot in the desert below in all history—and the number who had landed planes here could be counted on your fingers.

A compass course was invaluable in the area where there were no section lines, roads or towns. Wilson followed his Kollsman to the general location of the valley, then we began to search in ever-widening circles. We covered hundreds of square miles in about 20 minutes. Suddenly I saw Wilson swoop downward, dragging a valley surrounded by red and cream cliffs.

Faintly traceable in the purple sage was a 20-foot wide irregular path that ran lengthwise along the valley for about 400 yards. As we made the pattern in our canyon, we could see old Indian houses in the high sandstone walls. Dense juniper growths covered the mesas.

On final approach it was necessary to glide directly over a large ruin atop a hillock. I wondered what the Indians of 600 years ago would have done had they seen the "great silver bird" settling onto their front lawn. The plane bounced, shook, and lurched to a stop, right at the far edge of the tangled scrub. The altimeter showed 6,468 feet.

A few moments later, the Aeronca *Sedan* powered in for a relatively smooth landing on the rough ground.

Our party was safely down in the heart of America's last great frontier.

We looked around. Rumor had it that wild cattle roamed in the dense vegetation—lean old longhorns with a six-foot spread who ran like antelopes upon the approach of man. And we had heard about the ancient cliff dwellings and flat-land Indian houses built of stone years before America was discovered. Indian history authorities say that a devastating 20-year drought caused the tribes in the vast Mesa Verde area to leave the homes in which they had lived for generations and move southwestward in search of greener lands about 1410 A.D.

Today, the ruins of their dwellings and relics of their civilization remain. But the Indians never came back.

We started for the south rim of the valley. Kent Wilson led the way, followed by Don Vest, owner of the Vest Aircraft Company [see "Aviation's Million Dollar Salesman," July 1950 FLYING], and his son, George. The camera and I brought up the rear.

Rabbits scuttled in the underbrush and several deer stood nervously far up on the rocky walls. After a short hike we neared a remarkably-preserved ancient dwelling on a rocky ledge among pine trees. The walls, formed of wide flat rocks placed one on top of the other, had toppled here and there—and the roof had vanished years ago. Apparently cement was not used to hold the walls together.

At one end of the series of rooms was a high, circular tower, looking odd next to the small square architecture of most of the cubicles. Here, Don began to dig with a shovel he'd carried along. After a few moments he uncovered a water jar with a handle on it—the most important archeological discovery of our trip.

But on top of the ground, lying around every site we investigated, were arrow heads, pieces of pottery and spear heads. There must be hundreds of dwellings scattered all through the region, still unexplored. Most of the pottery was painted.

"This Indian paint is better than anything we manufacture today," said Kent. "Look at it. These colors have been exposed for centuries but they're still fresh." They almost sparkled in the sunlight: black, white, green, brown and red designs. Kent pointed to several of the pieces that had small indentations made by the fingernail of a squaw when the clay was soft.

I was amazed at the excellent condition of the roof timbers in one of the dwellings.

"How long do you think those timbers have been up there?" I asked Kent.

"I'd guess anywhere from 600 to 1,000 years," he said.

The timbers were weathered but they were still stout and whole. The country is arid and probably the atmosphere aided in wood preservation.

After we had explored several dwellings, we split up into three sections. George and Kent explored a deep gorge that led to a rocky prominence which commanded a view of the entire valley. Don went out alone to stalk some game and I climbed up the side of a cliff to take some color photographs.

After a while I heard four shots in quick succession, reverberating sharply in the silence. Later I found he had shot a buck with his .357 Magnum revolver. We dragged the animal two miles back to the plane and flew it to Denver with us.

Late that afternoon we hiked to the base of the cliffs that formed the north wall of the lost valley and climbed up the sides. High on the precipice we found narrow paths the Indians had used. They were hardly wide enough for a man to stand sideways and they had a sheer drop-off of hundreds of feet. I found places where toe-holds had been gouged out of solid rock so the Indians could scramble up to their maize fields on top of the mesa.

From the mesa, the colors and scenery were breathtaking. High, mosque-shaped sandstone slivers rose from the valley floor. Red and orange rock formations were hundreds of feet high.

It was getting late, though, and we clambered down. Walking across the valley, we found hundreds of weathered antlers, which indicated the locale was a breeding place for deer. Don had stalked his game earlier in the day but we soon found that he'd done the job the hard way. All you had to do, we discovered, was to fire the pistol into one of the ravines and wait a second. Startled deer would suddenly jump out and dive for the lower sage brush flats.

The entire expedition was filled with exploration and discovery but we didn't have equipment or provisions for a longer stay. When we finally left the lost valley, the first plane flew cover until the second was airborne. Take-off was bumpy, but we skimmed down a draw for a couple of miles until we got enough airspeed to climb out. We were loaded with game and with relics. And we were already making plans for a return trip. Now that we'd seen the ground, the rugged terrain didn't seem so terrifying. We began to notice possible landing spots on the mesa tops, on ledges, in dry canyons—and even on sand bars deep in the Colorado River canyon.

When we go back the next time we'll take field glasses, sleeping bags, water, salt and beans. We'll set up a base camp, live off the country, and use the planes to spot cliff dwellings and flat-land ruins we want to explore. One plane will always fly cover for the other.

We'll undoubtedly find new landing strips in this last great American frontier and may even walk where white men have never walked before. END

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The Menace

(*Continued from page 19*)

is a common sight. But you don't find short-sighted sporting pilots behind the Iron Curtain. And in the West, you don't find thousands of private individuals making their 150th or 200th parachute jump simply for the fun of it.

Even before the war, Soviet "sports pilots" performed feats which in the "reactionary" world would look more like military achievements. As long ago as 1937, Soviet "sporting aviators" flew nonstop from Moscow to the United States, passing over the Polar ice cap. Some of the crew members on those flights are now generals in the Red Air Force.

In every part of the Soviet Union, male and female lightplane pilots, glider pilots, balloon pilots, parachute jumpers and aircraft modellers are undergoing regular training. Last November, Maj. Gen. Richard Hilton, former British military attache in Moscow, said that the Soviet Union is making even its remotest villages air-minded and is amassing a flying reserve of tremendous proportions.

The people's civil flying organization, DOSAV ("All-Union Society of Voluntary Assistance to Aviation") is working on a scale far exceeding anything along the same line in the world. It is quite possible, said General Hilton, that the trainees may some day be used in war "in forms which may seem impossible to our hidebound way of thinking."

In 1935, there were 135 flying clubs in the Soviet Union. This figure had risen to nearly 400 by the end of 1948 and is still rising.

DOSAV organizes its activities thoroughly. It even goes so far as organizing competitions for design of trainer and sporting aircraft. One competition provided for 10 prizes ranging from 10,000 to 40,000 rubles. In parachute training, a strict set of regulations providing for varying ranks of civilian parachutists has been established. A "master jumper" is a parachutist who has jumped at least 50 times from different altitudes; 387 master jumpers were registered in the USSR last spring, most of them with over 150 jumps and five with more than 1,000 jumps.

Significantly, control of DOSAV lies with the military. President of DOSAV is Lieut. Gen. Kamanin of the Red Air Force. END

The Mail Box

(*Continued from page 6*)

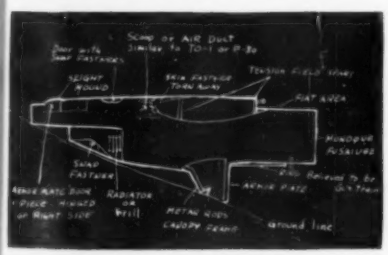
smallness, cannot afford to have an Air Force of its own in which I could enlist, and civil flying is practiced by a score of pioneers only.

Thanks to FLYING I am able to follow all new developments in aeronautics about which I otherwise would know little or nothing at all.

JULES PUTZ
Grand Duchy of Luxembourg
Europe

A QUESTION FROM KOREA

We have come to you with a problem . . . Enclosed are drawings (using the word loosely), we made of a center section of a plane found here at this ex-Commie training field.



Corporal Wood's sketch

After some discussion by the hangar pilots, we narrowed it down to a Russian copy of the Bell P-39 (*Airacobra*). A P-39, if you remember, had an engine mounted behind the pilot compartment. The scoops could be intakes for oil coolers. The radiators or grills on the side cowling would be for the extension drive shaft and any guns mounted forward of the cockpit. The hump on the underside of the nose could be a nose-wheel for tricycle gear. Most Russian-made aircraft have gear that fold back, turn, and up, and are not completely enclosed. The presence of rivet-heads on the lower skin on the wing hints there was a fairing of some type over the knuckle. The only thing that seems to indicate this plane is *not* a Russian P-39 is that there are two U-shaped brackets about two feet long mounted inside, just below the grill. These could be gun mounts.

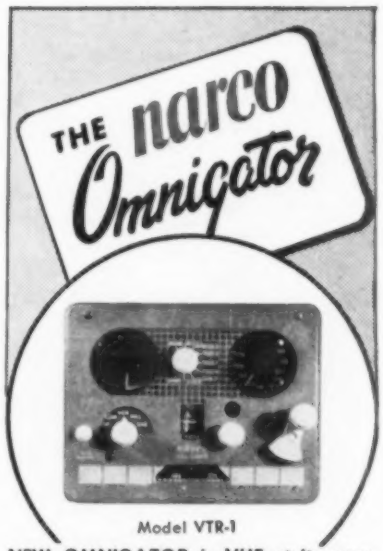
I (Corporal Wood) am a hydraulic mechanic and am curious about what the Russians have in that line. From all the wrecked Russian planes I've seen, I have come to the conclusion that the USSR is either short of alloy or doesn't have any at all. Their hydraulic cylinders are crude and heavy, yet the size indicates effectiveness. With such parts as that, their planes must weigh a ton. No wonder they have a 5-in-1 actuating cylinder for wing flaps in an I1-10.

We got hold of your November issue. Here, where reading material is scarce, that copy of FLYING is really precious.

CPL. RICHARD L. WOOD
PFC. MAURICE M. GAY
Yonpo, Korea

● *Says Francis W. Dunn of Bell Aircraft Corporation: "The material has made the full rounds here and the results are as follows. Our engineers who have examined the drawings say the general arrangement of wing canopy and cowling bears some similarity to the P-39 but the sketch is too rough for positive identification. The landing gear location appears to be too far forward for a tricycle landing gear with the engine located behind the pilot. Two of the engineers reacted immediately to this sketch by saying it looked more like a P-40 gear mount.*

"On the other hand, Russia received so many P-39's from the U.S. on lend lease during the war that it doesn't seem likely



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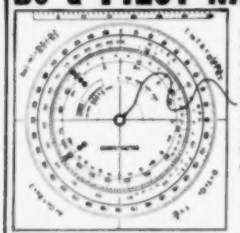

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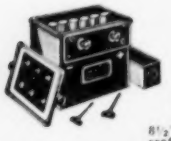

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the Ruskies would have to copy the Airacobra. *My personal opinion is that if the corporal came across a P-39, it probably is one which was built in this country, sold to the Soviets under lend lease, and then flown up the ferry route from Great Falls, Mont., to Fairbanks, Alaska, and turned over to Soviet pilots there. A great many fighters and bombers were delivered via the Alsib (Alaska-Siberia) route and the P-39's and P-63's which went to Russia numbered 7,229 (4,773 were P-39's).*

"Some of the P-63's were delivered right up to VJ Day and could conceivably still be in flying condition. It probably would have required cannibalization of some models to keep others flying but the French Air Force has done just that with some of its P-63's in Indo-China, and with excellent results."—ED.

A LATE FIRST

In your January issue you have an interesting series of pictures of Soviet jets. You say, ". . . These pictures from behind the Iron Curtain are the first authentic unretouched photographs of Soviet jet warplanes which have ever been published in a western country."

. . . These same pictures, furnished by a Swedish correspondent, were published in May or June, 1950, by the French periodical "Aviation Magazine."

BLAIN A. SIMS

Williams AFB, Ariz.

● FLYING'S *claim was too broad. Photos were printed for the first time in the U.S.; the French journal, "Aviation Magazine," holds the honor of printing them for the first time in a western country.*—ED.

THE STRAIGHT DOPE

I'm inclined to disagree with Ben Robin's article, "Is A Straight Take-off Always Best?" [December, 1950, FLYING]. Anyone who's familiar with the theory of flight knows that downwind turns at low altitudes are extremely dangerous. I personally know of several fatalities that could have been avoided if the pilots had landed straight ahead after power failure during take-off. Instead, they tried to turn back—and died.

Brother, don't turn back if you don't have the altitude. Land reasonably straight ahead; your hide's worth more than the airplane.

JAMES AUSTIN

Globe, Ariz.

I say a straight take-off's always best—and I think some of the things Robin says are ridiculous. He says a lightplane can land anywhere if you have altitude and that real danger exists only if an engine quits on take-off.

As I see it, danger lurks any time your engine dies—and that is proved by the crashes and how they happen. One pilot may have his engine quit and cream the plane; yet another pilot may hit a field on the nose under similar circumstances and escape unhurt.

The slowest way to get altitude is by climbing turns, whereas if you take off and climb as rapidly as possible you haven't got one wing down in case the engine quits. With a wing down, you stall darned quickly.

Climb out straight and level on take-off. Then you can recover from a stall just by pushing the nose down.

IVAN A. KAY

Westboro, Mass.

Orchids to Ben Robin for his "straight take-off" article. It's refreshing to hear from an instructor who is not in a rut.

. . . The traffic pattern at Browns airport in Miami, Fla., calls for a 90° right turn just after take-off in order to avoid an area of dense trees and to stay near open fields. So far as I know, no accidents have ever resulted from this standard procedure.

When checking out students on night flying I always have them hold the brakes and run up full power before starting the take-off run. After take-off I want to gain altitude as rapidly as possible. By the time it is no longer possible to make an emergency landing on what's left of the runway ahead, you should have enough altitude to make a safe turn back. The traffic pattern on all larger fields should be tight enough so that the airport is the only emergency landing spot necessary to consider.

Another "instruction rule" that defeats its safety objective is the one that calls for the first turn after take-off to be level with reduced power. This procedure is considered safer than a climbing turn at low altitude because the climbing speed could be dangerously close to the stalling speed in a turn. Yet, invariably, when I fly with other instructors' students, they reduce the throttle too far and/or before lowering the nose and mush around that turn at a slower speed than if they had maintained a steady climb. . .

BRUCE K. HALLOCK

Austin, Tex.

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